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90-1809

No. ———

Supreme Court, U.S.
FILED
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IN THE

Supreme Court of the United States

OCTOBER TERM, 1990

GENERAL ELECTRIC COMPANY,
NATIONAL RAILROAD PASSENGER CORPORATION,
CITY OF PHILADELPHIA, SOUTHEASTERN PENNSYLVANIA
TRANSPORTATION AUTHORITY, MONSANTO COMPANY, and
CONSOLIDATED RAIL CORPORATION,
Petitioners,

v.

MARY ALICE KNIGHT, *et al.*,
Respondents.

Petition for a Writ of Certiorari to the United States Court of Appeals for the Third Circuit

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APPENDIX TO PETITION FOR A WRIT OF CERTIORARI

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APPENDIX A

[Please note: Amendments to this opinion made by the Court of Appeals' orders of October 29, 1990 and November 23, 1990 are indicated as follows: deletions made by the amendments are shown by italicizing the words deleted and enclosing them within brackets; additions made by the amendments are shown in bold-face type.]

Filed September 20, 1990

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-1973/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92, 89-1070/71/72/73/74/75/76/77/78/79 and 89-1097

No. 88-1973

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CHRISTOPHER S. and BROWN, JACQUELINE MICHELL, h/w

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Christopher Brown, *Appellant*

No. 88-1974

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CATHLENE

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Cathlene Brown, *Appellant*

No. 88-1975

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CRAIG A. and
BROWN, CATHERINE D. h/w

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Craig Brown, *Appellant*

No. 88-1976

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BARBETTA, MARGHERITA

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Margherita Barbetta, *Appellant*

No. 88-1977

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

JOHNSON, MARY RETTA

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Mary Retta Johnon, *Appellant*

No. 88-1978

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CELESTE

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Celeste Brown, *Appellant*

No. 88-1979

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CLEMMON L.

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Clemmon L. Brown, *Appellant*

No. 88-1980

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CLOYD H.

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Cloyd H. Brown, *Appellant*

No. 88-1981

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, CURTIS

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), AND CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

CITY OF PHILADELPHIA
UNITED STATES OF AMERICA
Curtis Brown, *Appellant*

No. 88-1982

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

REID, WILLIAM JR., and
REID, WILLIAM JR., EXECUTOR OF THE
ESTATE OF REID, MINNI, DECEASED

v.

MONSANTO COMPANY
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION
AUTHORITY ("SEPTA"), NATIONAL RAILROAD
PASSENGER CORPORATION ("AMTRAK"); and
CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

UNITED STATES OF AMERICA
William Reid, Jr., *Appellant*

Nos. 88-1983 & 89-1070

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BROWN, MABEL, Individually and on
behalf of all others similarly situated

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION
AUTHORITY ("SEPTA"); NATIONAL RAILROAD
PASSENGER CORPORATION ("AMTRAK"); and
CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

UNITED STATES OF AMERICA
ROY F. WESTER, INC. and
GENERAL ELECTRIC COMPANY and
THE BUDD COMPANY and
WESTINGHOUSE ELECTRIC CORPORATION
Mabel Brown, *Appellant*

Nos. 88-1984 & 89-1077

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

WILLIAMS, ANDRE, SR., Individually and on behalf of all others similarly situated

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"); NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"); CONSOLIDATED RAIL CORPORATION ("CONRAIL"); MONSANTO COMPANY; GENERAL ELECTRIC COMPANY; THE CITY OF PHILADELPHIA

Andre Williams, Sr., *Appellant*

Nos. 88-1985 & 89-1076

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

NARCISE, HELEN V., Administratrix of the Estate of NARCISE, JOHN G., deceased, NARCISE, HELEN V. as personal representative of NARCISE, JOHN G., NARCISE, HELEN V. in her own right

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"); NATIONAL RAILROAD PASSENGER ASSOCIATION ("AMTRAK"); CONSOLIDATED RAIL CORPORATION ("CONRAIL"); MONSANTO COMPANY ("MONSANTO"); GENERAL ELECTRIC COMPANY ("GE"); CITY OF PHILADELPHIA ("PHILADELPHIA")

v.

UNITED STATES OF AMERICA
Helen V. Narcise, *Appellant*

Nos. 88-1986 & 89-1075

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

KNIGHT, MARY ALICE

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"); NATIONAL RAILROAD PASSENGER ASSOCIATION ("AMTRAK"); CONSOLIDATED RAIL CORPORATION ("CONRAIL"); MONSANTO COMPANY ("MONSANTO"); GENERAL ELECTRIC COMPANY ("GE"); CITY OF PHILADELPHIA ("PHILADELPHIA")

v.

UNITED STATES OF AMERICA
Mary Alice Knight, *Appellant*

Nos. 88-1987 & 89-1074

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

INGRAM, JOHN SR. and INGRAM, PATRICIA in their own right and as parents and natural guardians of INGRAM, JOHN JR., and INGRAM, APRIL in her own right

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"); NATIONAL RAILROAD PASSENGER ASSOCIATION ("AMTRAK"); CONSOLIDATED RAIL CORPORATION ("CONRAIL"); MONSANTO COMPANY ("MONSANTO"); GENERAL ELECTRIC COMPANY ("GE"); CITY OF PHILADELPHIA ("PHILADELPHIA")

v.

UNITED STATES OF AMERICA
John Ingram, Sr. and
Patricia Ingram, *Appellants*

Nos. 88-1988 & 89-1079

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

CUNNINGHAM, MATTHEW AND
CUNNINGHAM, BESSIE

v.

MONSANTO COMPANY and SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA") and NATIONAL RAILROAD PASSSENGER CORPORATION ("AMTRAK") and CONSOLIDATED RAIL CORPORATION ("CONRAIL")
Matthew and Bessie Cunningham,
Appellants

Nos. 88-1989 & 89-1071

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BURRELL, GEORGE ALBERT and PRISCILLA ETHERIDGE, in their own right, and BURRELL, GEORGE ALBERT and BURRELL, PRISCILLA ETHERIDGE, as parents and natural guardian of BURRELL, AMBER SHARDAI, a minor, and BURRELL, GEORGE ALBERT, as parent and natural guardian of WALKER, ANDREW, a minor, and BURRELL, PRISCILLA ETHERIDGE, as parent and natural guardian of BURRELL, BOBBY GEORGE ALBERT CHRISTIAN, a minor,

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"), and NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"), and CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

UNITED STATES OF AMERICA
George Albert Burrell and Priscilla Etheridge Burrell, *Appellants*

Nos. 88-1990 & 89-1072

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

CUMMINS, WALLACE DARRYL

v.

SOUTHEASTERN PENNSYLVANIA
TRANSPORTATION AUTHORITY ("SEPTA") AND
NATIONAL RAILROAD PASSENGER
CORPORATION ("AMTRAK") AND
CONSOLIDATED RAIL CORPORATION
("CONRAIL")

v.

UNITED STATES OF AMERICA
Wallace Darryl Cummins, *Appellant*

Nos. 88-1991 & 89-1073

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

JONES, K. LOUISE, ADMINISTRATRIX OF THE ESTATE OF
JONES, HARVEY N. JR., DECEASED AND JONES, K. LOUISE
AS PERSONAL REPRESENTATIVE OF JONES, HARVEY N. JR.,
AND JONES, K. LOUISE IN HER OWN RIGHT

v.

SOUTHEASTERN PENNSYLVANIA
TRANSPORTATION AUTHORITY ("SEPTA"),
NATIONAL RAILROAD PASSENGER
CORPORATION ("AMTRAK") AND
CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

UNITED STATES OF AMERICA
CITY OF PHILADELPHIA
K. Louise Jones, *Appellant*

Nos. 88-1992 & 89-1078

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

STANBACH, CHARLES W., Executor of the Estate of
STANBACH, CHARLES, JR., deceased and
STANBACH, CHARLES W., as a personal representative of
STANBACH, CHARLES W. in his own right and
STANBACH, SUSANNA

v.

SOUTHEASTERN PENNSYLVANIA
TRANSPORTATION AUTHORITY ("SEPTA") and
NATIONAL RAILROAD PASSENGER
CORPORATION ("AMTRAK") and CONSOLIDATED
RAIL CORPORATION ("CONRAIL") and
MONSANTO COMPANY ("MONSANTO")

v.

CITY OF PHILADELPHIA
Charles and Susanna Stanbach, *Appellants*

No. 89-1097

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

BUTLER, WILLIAM; BUTLER, THERESA;
SIMPSON, MARVIN L.; SIMPSON, ALLEN K.;
SIMPSON, KAREN R.; SIMPSON, DONALD E.;
and JACKSON, BRYAN M.

v.

SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY ("SEPTA"); NATIONAL RAILROAD PASSENGER CORPORATION ("AMTRAK"); and CONSOLIDATED RAIL CORPORATION ("CONRAIL")

v.

UNITED STATES OF AMERICA
CITY OF PHILADELPHIA
William Butler, Theresa Butler, Marvin L. Simpson, Allen K. Simpson, Karen R. Simpson, Donald E. Simpson and Bryan M. Jackson,
Appellants

On Appeal From the United States District Court for the Eastern District of Pennsylvania
(D.C. Civil Nos. 86-7414/15/16/17/18/19/20/21/22/87-5304, 86-2229, 87-1258, 87-1190, 87-0712, 86-7561, 87-5269, 86-2235, 86-2669, 86-5277, 87-3227, 87-2874

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Before: BECKER, MANSMANN and NYGAARD, *Circuit Judges*

(Filed September 20, 1990)

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OPINION OF THE COURT

BECKER, *Circuit Judge.*

This is a toxic tort case brought by some thirty-eight persons who have either worked in or lived adjacent to the Paoli railyard, an electric railcar maintenance facility at the western terminus of the noted Paoli Local, which serves the Philadelphia Main Line. The plaintiffs' primary claim is that they have contracted a variety of illnesses as the result of exposure to polychlorinated biphenyls, better known as PCBs. PCBs are toxic substances which, as the result of decades of PCB use in the Paoli railcar transformers, can be found in extremely high concentration at the railyard and in the ambient air and soil. The defendants are Monsanto Corporation, the nation's leading manufacturer of PCBs (marketed under the trade name "Aroclor"); General Electric Company, manufacturer of the transformers; Amtrak, owner of the railyard site since 1976; Conrail, which operated the facility between 1976 and 1983; the Southeastern Pennsylvania Transit Authority (SEPTA), which has operated the facility since 1983; and the City of Philadelphia, which owns some of the railroad cars at the facility.[1]

This opinion addresses an appeal by all plaintiffs from the grant of summary judgment by the district court in

[1] The district court's subject matter jurisdiction was founded primarily upon 28 U.S.C. § 1331 (federal question) because of the inclusion of claims under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§ 9601-75, and the Federal Employer's Liability Act (FELA), 45 U.S.C. § 51-60. The court also exercised pendent jurisdiction over various state law claims. Several plaintiffs initially filed their claims in Pennsylvania courts, but these claims were removed under 28 U.S.C. § 1441(c).

favor of all defendants on all claims except those for property damage and response costs under CERCLA.[2] We direct our attention principally to a series of pretrial evidentiary rulings by which the district court apparently excluded[3] the bulk of the expert reports and testimony upon which plaintiffs relied to establish (1) that they were subject to an abnormally high level of PCB exposure, and (2) that this exposure caused them harm. Because the grant of summary judgment inexorably flowed from these evidentiary rulings, if they are set aside so must be the summary judgment. Our scrutiny of the rulings will focus not only upon their legal foundations, but also on the procedures by which they were made and the adequacy of their articulation.

We conclude that the district court's evidentiary rulings must be set aside for a number of reasons. One problem with the district court's rulings is procedural. Not only did the court fail to give plaintiffs an adequate opportunity to present their factual and legal contentions on evidentiary issues, it ruled on an inadequate factual record, and it failed adequately to articulate the bases for its rulings. It also failed to follow the protocols established by the jurisprudence of this court for evidentiary rulings governed by Fed. R. Evid. 702 and 703.

Other problems with the district court opinion are substantive. The court applied too stringent a standard to the qualification of experts under Rule 702 and the court erred in its application of the *Downing* test for the admissibility of novel scientific evidence (under Rule 702). Given these improper evidentiary exclusions, we cannot affirm the district court's summary judgment ruling be-

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[2] The district court certified the matters before us as final judgments. *See* Fed. R. Civ. P. 54(b).

[3] In a number of instances, the district court did not articulate whether it was excluding expert opinion as an evidentiary matter or was merely ascribing little weight to it in its summary judgment analysis.

cause if the improperly excluded evidence is considered, the record contains genuine issues of material fact on the toxic tort issues.

A number of other discrete legal issues are also before us on appeal. These include the viability of plaintiffs' claims to recover the costs of periodic medical examinations necessary to protect against the development of latent diseases caused by their exposure to PCBs ("medical monitoring") under Pennsylvania law; the propriety of the district court's refusal to permit certain plaintiffs voluntarily to dismiss their complaint so as to proceed at a later time when their apparently sub-clinical injuries manifest themselves; and the availability to SEPTA of a lack of notice defense under 42 Pa.C.S.A. § 5522. We find that the district court abused its discretion in refusing to permit the voluntary dismissal without prejudice of certain plaintiffs' claims, and that the court erred as a matter of law in its analysis of both the medical monitoring and SEPTA notice issues. For all these reasons, we must reverse the grant of summary judgment and remand for further proceedings.

I. PROCEDURAL HISTORY

Plaintiffs filed their complaints in the district court for the Eastern District of Pennsylvania beginning in April 1986. The complaints alleged a variety of theories of recovery, including claims based upon CERCLA, common law tort, and the medical monitoring doctrine. The twenty-one actions before us on this appeal were consolidated. On September 24, 1987, in response to a motion by defendants, the district court filed a case management order which provided a schedule for conducting further discovery and filing summary judgment motions.[4]

---

[4] The order contained the following four mandates:

1. Defendants will answer discovery efforts by the Plaintiffs directed to reveal the quantity and nature of PCBs used at the Paoli Railyard and the health effects on Defendants' employees

The defendants filed a joint motion for summary judgment.[5] After plaintiffs answered the motion, attorneys on both sides requested oral argument. In a letter dated October 28, 1988, the court denied these requests, stating that oral argument would be unnecessary "[b]ecause the issues contained in those motions have been throughly and extensively briefed and because I have been working with this case for over a year . . . ." The court also [*denied plaintiffs' request for*] **failed to conduct** *in limine* hearings regarding the admissibility of the plaintiffs' expert testimony, notwithstanding defendants' summary judgment strategy that depended largely on exclusion of that testimony under Fed. R. Evid. 702, 703 and 403.

On November 28, 1988, the district court granted defendants' joint motion for summary judgment against all plaintiffs on the personal injury claims. The court's order was accompanied by an opinion, discussed below in Part IV, concentrating on the exclusion of plaintiffs' expert testimony. These appeals followed.

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of exposure to PCBs. This Discovery is to be completed by December 23, 1987.

2. Plaintiffs will then answer discovery efforts by the Defendants directed to reveal whether the Plaintiffs have suffered personal injury and whether the injury is caused by exposure to PCBs caused by the Defendants. This Discovery is to be completed by March 22, 1988.

3. All other discovery is to be stayed meanwhile.

4. Any Summary Judgment Motions, to be made by the Defendants, are to be filed by April 21, 1988.

[5] Throughout the course of discovery, individual parties filed numerous motions for summary judgment or dismissal with respect to discrete issues. However, for purposes of this appeal, our discussion will center on the joint motion for summary judgment. Other motions will be discussed where they are directly relevant to issues on appeal—for example, the *Butler* plaintiffs' motion for dismissal without prejudice, and defendants SEPTA's separate motion for summary judgment under a governmental notice statute.

II. APPELLATE JURISDICTION

Defendants make a number of attacks upon our appellate jurisdiction, all of which we find without merit, and only one of which warrants extended discussion: did the original notice of appeal in ten of the cases fail to identify the appealing parties with the specificity required by *Torres v. Oakland Scavenger Co.*, 487 U.S. 312 (1988).[6] In *Torres*, the notice of appeal was captioned, "Joaquin Moreles Bonilla, et al., Plaintiffs in intervention." The body of the notice named fifteen of the sixteen putative appellants, but not Torres. The Court concluded that the notice was insufficient to specify Torres as an appellant, and that he was therefore barred from pursuing his appeal for failing to comply with the requirements of Fed. R. App. P. 3(c). *See* 487 U.S. at 317-18.

We recently had the opportunity to construe *Torres* in *Dura Systems, Inc. v. Rothbury Investments, Ltd.*, 886 F.2d 551 (3d Cir. 1989), *cert. denied*, 110 S.Ct. 844 (1990), in which we held that a consent order, entered after a notice of appeal but within the period required for timely notice of appeal, could confer jurisdiction over parties not explicitly named in the notice of appeal. *See id.* at 555. We summarized the applicable principles as follows:

> In formulating its holding, the [*Torres*] Court made clear that Rules 3 and 4 of the Federal Rules

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[6] Although a number of the appeals were premature, Fed. R. Civ. P. 54(b), the prematurity was cured by the subsequent Rule 54(b) certification. *See Dowling v. City of Philadelphia*, 855 F.2d 136, 158 (3d Cir. 1988); *Cape May Greene, Inc. v. Warren*, 698 F.2d 179, 184-85 (3d Cir. 1983); *Richerson v. Jones*, 551 F.2d 918, 922 (3d Cir. 1977). We reject defendants' claim that this holding is inconsistent with *Griggs v. Provident Consumer Discount Co.*, 459 U.S. 56 (1982) (per curiam), which held that the filing of a post-judgment motion under Fed. R. Civ. P. 50(b), 52(b), or 59 destroys an otherwise effective notice of appeal. Unlike *Griggs*, this case involves no such post-judgment motion.

of Appellate Procedure create a jurisdictional threshold, and that the requirements of the two rules may not be abrogated for "good cause shown" under Fed. R. App. P. 2. Moreover, the fact that Rule 3 excuses "informality of form or title" in a notice of appeal does not forgive compliance with the Rule's requirements: "[p]ermitting imperfect but substantial compliance with a technical requirement is not the same as waiving the requirement altogether as a jurisdictional threshold." Although the *Torres* court mandated compliance with the specificity requirement of Fed. R. App. P. 3(c), it recognized that:

> the requirements of the rules of procedure should be liberally construed and that 'mere technicalities' should not stand in the way of consideration of a case on the merits. Thus, if a litigant files papers in a fashion that is technically at variance with the letter of a procedural rule, a court may nonetheless find that the litigant has complied with the rule if the litigant's action is the functional equivalent of what the rule requires.

This approach mirrors the practice sanctioned in the Advisory Committee Notes to the 1979 amendment to Fed. R. App. P. 3(c), which cites with approval cases holding that, "so long as the function of notice is met by the filing of a paper indicating an intention to appeal, the substance of the rule has been complied with."

Id. at 554-55 (footnote and citations omitted).

Applying those principles here, it is not clear that plaintiffs' notice of appeal in the ten referenced cases, in its original form, was insufficient. For example, the original notice appears to have served as a "functional equivalent" of the requirements of Rule 3(c) because it mentions the docket numbers and surnames of the cases then

before the district court. Indeed, correspondence from defense counsel confirms that no party was misled by the notice, and that all parties presumed it to include all plaintiffs referenced under the relevant docket numbers.

At all events, any impediment that might have existed was removed by a January 6, 1989 letter from counsel for the subject plaintiffs to the clerk of this court, with copies to all counsel, just two days after the Rule 54(b) certification, identifying in detail the parties to the appeal. The letter is analogous to the consent order in *Dura Systems* in that the letter was filed within the period allowed for appeal. The "Court's directive to construe the rule "liberally," and to avoid a construction that would allow 'mere technicalities' to bar consideration of a case on the merits" *Id.* (quoting *Torres*, 108 S.Ct. at 2408) compels this result.[7] *Accord Masquerade Novelty, Inc. v. Unique Industries, Inc.*, No. 90-1090 (3d Cir. August 16, 1990) (attorney appearance form and civil appeal information statement filed within time limit constitute adequate notice).

III. THE SUMMARY JUDGMENT RECORD

A. *The Plaintiffs' Submissions*

Plaintiffs set out to prove that their personal injuries were proximately caused by their exposure to the PCBs that defendants permitted to contaminate the area surrounding the Paoli Railyard. Their case depends upon expert testimony pertaining to exposure and causation. The attorneys for different plaintiffs employed different expert witnesses, and it is therefore convenient, in discussing the record before us, to categorize plaintiffs according to which counsel represents them.

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[7] Our recent decision in *Cruz v. Melendez*, 902 F.2d 232 (3d Cir. 1990), is not to the contrary. That case, like *Torres*, stands only for the proposition that, without further explanation, proffered in a timely fashion, the designation, "et al.," is insufficient to provide the required notice.

Of the ten cases in which plaintiffs are represented by Kohn, Savett, Klein & Graf, P.C., or Klehr, Harrison, Harvey, Branzburg, Ellers & Weir, (the "Kohn/Klehr plaintiffs"), nine answered discovery with the opinions of three experts: Dr. Herbert Allen, Dr. Deborah Barsotti, and Dr. Arthur Zahalsky. In the tenth Kohn/Klehr case, *Cunningham*, and in the *Reid* case,[8] Dr. Harry Shubin submitted an opinion on the question of causation. In the nine cases in which plaintiffs are represented by D. Bruce Hanes, expert testimony was offered solely by Dr. G. John DiGregorio. The remaining plaintiffs offered no expert testimony.

Dr. Herbert Allen received his doctorate in environmental chemistry from the University of Michigan in 1974. He is currently employed as a professor of chemistry at Drexel University, where he serves as the director of Drexel's Environmental Studies Institute. *Id.* Allen has published numerous scholarly articles. His primary role was to testify to the Kohn/Klehr plaintiffs' exposure to the Paoli Railyard's elevated PCB levels.

Initially, Allen noted the "extremely high levels" of PCBs in soil samples taken from the neighborhood adjacent to the yard. A9253. He explained that runoff from the railyard caused contamination in the soil on Central Avenue, with the highest concentrations of PCBs being found in residential yards adjacent to the railyard. Central Avenue samples contained concentrations as high as 577 mg/kg, while some residential yard concentrations were as high as 1000 mg/kg. Dr. Allen opined that the high concentrations of PCBs found deep in the soil indicated a discharge of extremely high amounts of PCBs. He also noted specifically that certain "heat-producing" operations, such as the welding and cutting of contaminated equipment and the burning of contaminated railroad ties, which employees testified had

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[8] Appellant William Reid, Jr., is separately represented by James C. Sargent, Jr.

occurred at the yard, could have converted PCBs to other toxins such as PCDD's (dioxins) and PCDF's (furans). This testimony is particularly significant in view of the conclusion of certain of plaintiffs' proffered studies that exposure to PCDFs can cause numerous adverse health effects, *see infra* typescript at 30.

Relying on his knowledge of the scientific literature, his own testing, the testimony of employees, and a scientific formula which he had devised, Dr. Allen calculated the amount of PCBs in plaintiffs' bodies based on the amount of PCBs in the soil. Among other things he relied on the affidavit of an employee named Kraljevich who stated that the use of heat-producing tools caused PCBs to "hang in the air like a fog," and that leaking transformers caused foul PCB odors to permeate the air. A8677, A9257. Allen then concluded that neighborhood residents had been exposed to elevated PCB concentration since approximately 1940. Although unable to quantify the extent of plaintiffs' exposure, Allen opined that the residential plaintiffs may have been exposed to air containing more than 10^7 g/m3 of PCBs, while railyard employees may have suffered even greater exposure.

Deborah A. Barsotti, Ph.D., offered expert opinions on both exposure and causation for the Kohn/Klehr plaintiffs. Dr. Barsotti, a toxicologist, received her doctorate in pathology from the University of Wisconsin Medical School in 1980, and is qualified to interpret human clinical tests. A4978. She has published a number of articles on the toxicity of PCBs, and her work has been cited in the Congressional Record and in legislative debates on the Toxic Substances Control Act. She is currently employed as the Chief of the Research Analysis Branch of the Agency for Toxic Substance and Disease Registry (ATSDR) of the United States Government. A4658.

Barsotti based her opinions regarding exposure on her review of the relevant scientific literature and on her own gas chromatography testing. She explained that

PCBs may be absorbed into the body by oral ingestion, through the skin, or by inhalation, and that PCBs are transported through the body in blood, and eventually redistributed to fat and organs containing fat. A8995. She concluded that the plaintiffs had in fact ingested PCBs. A major part of Dr. Barsotti's exposure testimony consisted of her attempt to show, through gas chromatography tracing, that the PCBs to which plaintiffs were exposed came specifically from the Paoli Railyard. She did this by comparing chromatographic tracings of plaintiffs' blood to similar tracings from soil at Paoli. She then attempted to match certain "early emerging peaks," (in plaintiffs' blood tests which she testified related) to particular PCB isomers.

Barsotti used the results of these tests, along with medical and clinical records from the plaintiffs, to buttress her testimony regarding causation. In determining causation, she also personally inspected the railyard, and reviewed, *inter alia*, the Kraljevich affidavit, published reports and studies, and soil samples taken from the yard. She concluded that plaintiffs' exposure to PCBs at Paoli was a substantial factor in causing their particular injuries, including elevations in triglyceride, cholesterol, and liver enzyme levels.

Also testifying with respect to causation for the Kohn/Klehr plaintiffs was Arthur C. Zahalsky, Ph.D., who received his doctorate in microbiology from New York University in 1967, Dr. Zahalsky is a professor at Southern Illinois University, where he teaches courses in immunology and human diseases. A5873. However, he has spent the majority of his time in the past few years in his consulting business, which specializes in providing scientific consultation for litigation. A6283-87.

Dr. Zahalsky offered his opinion that plaintiffs have suffered immune system injuries as a result of their exposure to PCBs at Paoli. A3354. He testified that as a general proposition, PCBs damage the immune systems

of humans and animals because they alter the cell production and replenishment rate of immune cells, and impair the survivability of those cells. A9057. Basing his opinion on a personal inspection of the railyard and surrounding area, a review of plaintiffs' medical records and PCB exposure history, and various laboratory test results and published reports, Dr. Zahalsky concluded that plaintiffs have sustained immune system damage, and that exposure to PCBs at Paoli was a substantial factor in causing such damage. A9056-69. Zahalsky submitted a list of 82 studies upon which he relied in formulating his opinion. A number of these studies discussed two notorious incidents of human beings ingesting contaminated rice oil. These incidents, which took place in Japan in 1968 and Taiwan in 1979, are referred to as the "Yusho" and "Yu Cheng" incidents. The oil was tainted with large quantities of Kaneclor, a Japanese analog of Aroclor that contains significant amounts of PCDFs, as well as PCBs.

Harry Shubin, M.D., an internist, offered opinions on the issue of causation in the *Cunningham* and *Reid* cases. In formulating his opinion, Dr. Shubin examined the plaintiffs and reviewed medical records and lab test results. He cited numerous published studies and reports on which he claims to have relied. Shubin was also informed that the EPA had removed PCB-contaminated soil from the Cunninghams' residence. He diagnosed plaintiffs as suffering from a variety of illnesses and harmful conditions, and concluded that these conditions were caused by exposure to PCBs.

The nine plaintiffs represented by D. Bruce Hanes relied on the testimony of G. John DiGregorio, M.D., Ph.D. Dr. DiGregorio is a clinical pharmacologist who received a degree from Hahnemann University. The Hanes plaintiffs, residents of properties adjacent to the railyard, claim to have been injured because defendants permitted PCBs to flow onto these properties, thereby causing

plaintiffs to inhale PCB dust and ingest fruits and vegetables grown in the soil of their PCB-contaminated gardens. In formulating his opinions as to these plaintiffs, Dr. DiGregorio relied on medical history questionnaires filled out by plaintiffs themselves, laboratory tests revealing abnormal PCB blood levels in certain plaintiffs,[9] and scientific literature on the harmful effects of PCBs to both humans and animals. He performed no physicial examinations. He opined that five of the nine Hanes plaintiffs suffered from specific injuries caused by PCBs; that all nine suffered from anxiety of contracting diseases in the future based on their exposure to PCBs; and that all nine were at increased risk of contracting future diseases because of their exposure. *See, e.g.*, A6923, 6934, 7004, 7051-52. DiGregorio's testimony as to exposure was based largely on the statements of plaintiffs themselves and the results of laboratory tests revealing abnormal blood burdens of PCBs in various plaintiffs.

Although these expert witnesses were the only ones whose opinions were discovered pursuant to the case management order, they are not the only experts upon whom the plaintiffs rely. In response to the defendants' joint motion for summary judgment, plaintiffs submitted the affidavits of four additional experts; Ian C.T. Nisbet, Ph.D.; Robert K. Simon, Ph.D.; Benjamin Calesnick, M.D.; and William J. Nicholson, Ph.D.

Dr. Nisbet, who received his Ph.D. in physics from Cambridge University in 1958, currently serves as the

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[9] The issue of what constitutes a "normal" or "background" PCB exposure level is sharply contested. The district court adopted the findings of a study conducted by the Agency for Toxic Substance [*sic*] and Disease Registry (ATSDR), concluding that "the geometric mean serum concentration of populations having no known unusual source of PCB exposure range between 4.2 ppb (parts per billion) and 6.4 ppb." App. at 10,100. The Hanes plaintiffs point out that at least four of its number have tests showing a body burden of PCBs higher than the court-accepted background level. Hanes Br. at 16 n.2.

president of a scientific consulting firm. A8758. He has published numerous articles in the fields of human exposure to chemicals and the assessment of associated health risks. A8768-70. Dr. Nisbet submitted an affidavit containing his opinions that (1) the defendants' estimates of the background PCB exposure level in the United States, as well as the studies upon which these estimates were based, are mistaken; (2) the correct background level, which should be determined by an adipose to blood ratio calculation, is much lower;[10] (3) many plaintiffs exposures exceed the lower level; and (4) there are serious health hazards posed by exposure to PCBs. A8745-57.

Dr. Simon, who describes himself as "a professional industrial hygienist, toxicologist, and forensic analytical chemist," received his Ph.D. from the University of Maryland. A9297. The opinions contained in Dr. Simon's affidavit closely parallel those expressed by Dr. Nisbet, with varying degrees of emphasis.

Dr. Calesnick is a pharmacologist who received his medical degree in 1944 from Hahnemann Medical College, where he currently serves as a professor of medicine and as the director of Hahnemann's Division of Human Pharmacology. His resume lists one hundred published articles, as well as numerous academic and professional honors. A9109-19. Dr. Calesnick performed physical examinations and several laboratory tests on the Kohn/Klehr plaintiffs. He concluded summarily in his affidavit that these plaintiffs require medical surveillance as a consequence of their exposure to PCBs at Paoli. A9107-08.

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[10] This method of calculating blood levels of PCB exposure from measured levels of exposure in human adipose tissue was employed in the National Human Adipose Tissue Survey (NHATS study). The NHATS study concluded that only 10% of the United States population has blood levels greater than 5 ppb. Thus, the plaintiffs submit, a blood level greater than 5 ppb should be considered high. Dr. Simon also opined that the NHATS study employed the proper method of measuring the background level.

The final affidavit offered in response to the summary judgment motion was that of Dr. Nicholson, a physicist who received his Ph.D. from the University of Washington in 1960 and is currently employed as a professor of community medicine at Mount Sinai School of Medicine in New York City. A9373, A9385. He has published over seventy articles and has served on various professional and governmental committees. A9385-92. Nicholson's affidavit advances two major theses: (1) contrary to the assertions of defendants and their experts, the epidemiologic studies conducted to date *do* support a conclusion that PCBs are causally associated with adverse health effects to humans; and (2) defendants and their experts are incorrect in asserting that animal carcinogenicity studies have little relevance for estimating carcinogenicity in humans. A9374.

In order to support his first thesis, Dr. Nicholson conducted a "meta-analysis," in which he combined the results of numerous epidemiologic surveys in order to achieve a larger sample size, adjusted the results for differences in testing techniques, and drew his own scientific conclusions. Specifically, he concluded that the results of the various surveys, considered as a whole, show that exposure to PCBs can cause liver, gall bladder and biliary tract disorders. A9377. Nicholson maintains that this is true even though none of the individual surveys supports such a conclusion when considered in isolation.

B. *The Defendants' Submissions*

Defendants' view of the case, as encapsulated in their joint motion for summary judgment, is that plaintiffs "failed to submit competent evidence creating a genuine issue of material fact concerning either of two essential elements on which plaintiffs bore the burden of proof: abnormal exposure, and causation." Appellees' Br. at 36. In support of this assertion, defendants adopted a two-pronged approach. First, they vigorously attacked plaintiffs' expert testimony, and sought to have it excluded

under Fed. R. Evid. 702, 703, and 403. Second, defendants submitted studies and expert testimony of their own on both exposure and causation issues. Because the case was resolved at the summary judgment stage, where credibility determinations are inappropriate, the latter evidence is significant only insofar as it relates, within the contours of our Rule 703 jurisprudence, to whether certain of plaintiffs' expert opinions should have been excluded because they were not based on facts or data reasonably relied on by experts in the field.

On the question of exposure, defendants attack the opinions of both Dr. Allen and Dr. Barsotti. Defendants submit that Dr. Allen's testimony should not be considered because his data and methodology were unreliable. They assert that Dr. Allen ignored the actual measured body samples of PCB exposure, and instead attempted to calculate exposure levels from levels of PCBs in the soil by using a formula "of his own devising." Dr. Allen's opinion is unhelpful, defendants say, because he was unable to provide "an exact calculation of the PCB dose received by the inhabitants." A3345. Further, defendants submitted the affidavit of a physical chemist and chemical hazard control specialist, Neil Jurinski, Ph.D., who expressed the view that Dr. Allen's soil-to-air migration hypotheses were "pure speculation unsupported by the data available or by scientific principles," and that they "were not arrived at by using accepted scientific methods." A4226, 4228.

Dr. Barsotti, whose sought to show that plaintiffs were exposed to PCBs that came specifically from the Paoli Railyard, was subjected to similar methodological criticism for her "fingerprinting" method of gas chromatography. Defendants contend that Dr. Barsotti lacked experience in reviewing chromatographic tracings of human blood for evidence of PCBs, A5336-38, pointing out that Barsotti had never before attempted to compare soil chromatograms with human blood chromatograms.

A5067, 5328, 5331. They further criticize Barsotti for having claimed to be able to match "early emerging peaks" in certain PCB isomers, because she later conceded that it was impossible for her to do so, having failed to use the proper equipment. A5244-45, 5255-57, 5685-86, 5693-97. Defendants also attack Barsotti's procedures as impossible to replicate, because she kept virtually no record of either her procedures or the basis for her conclusions. She was, they note, unable to identify any particular soil sample which was compared with any particular plaintiff; neither could she produce the specific chromatograms she used to compare plaintiffs' PCB blood levels to those of the unexposed population or at the railyard. A5334, 5708, 5044-45, 5258-59, 5304-05.

Defendants further attack Dr. Barsotti's opinions because, although she could not "think of anybody" who had ever done the analysis she purported to do in this case, she pursued her own methods, and ignored the body of existing data, "including the Public Health Service's *Paoli Study*, which concluded that it was scientifically impossible to determine that the Paoli Yard rather than the environment in general was the source of the residents' exposure." Appellee's Br. at 19. A5021-22. In addition, defendants presented their own expert, Dr. Raymond Harbison, a professor of toxicology and pharmacology, who concluded that "Dr. Barsotti lacks the requisite experience in reading and interpreting human and soil chromatograms to be able to perform the type of analysis that she purported to perform," and that "if in fact Dr. Barsotti did what she claims, she would be the first person to do this." A4190-91. With regard to the validity of Barsotti's experimental procedures, Dr. Harbison opined that it is impossible to identify the source of such low PCB levels, that the equipment used could not support Barsotti's analysis, and that the experiments lacked control and have not been replicated. A4191-92. He therefore dismissed Barsotti's results as being scientifically invalid. *Id.*

Defendants also attacked Barsotti's opinions on causation, claiming that because she is not a physician, she is unqualified to make the differential medical diagnoses that defendants assert are critical to a finding of causation. Further, they argue that it was inappropriate for Dr. Barsotti to offer opinions on causation without ever having physically examined a single plaintiff. They point out that each of her nineteen scientific reports which represent her conclusions on nineteen plaintiffs is identical for the first fourteen pages, which Barsotti described as "boiler plate background information" on PCBs, A4900, 4980, and contains only one or two additional paragraphs, which list the alleged injuries of the individual plaintiff and conclude "to a reasonable scientific certainty" that they were caused by PCBs. A3328-37.

In support of their challenge to Dr. Barsotti's expertise and conclusions, defendants offered the affidavits of their own experts.[11] These experts concluded generally that Dr. Barsotti is not qualified to form opinions on medical causation, A4093; that the opinions she did form lack evidentiary support and would not withstand review by experts in the field, A4237, 4240, 4075, 4094; and that her opinions are therefore not based upon known science or medicine. Defendants also assail Dr. Barsotti's opinion that plaintiffs, including one two-year-old child, suffer from increased fear of illness and are emotionally distressed. They note that she offered this opinion, having spoken only to one plaintiff over the telephone, and without having met or examined any of the plaintiffs. Further, defendants contend that she per-

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[11] The experts were Anthony J. Triolo, Ph.D., professor of pharmacology at Jefferson Medical College; Dr. Gio Batta Gori, an epidemiologist and toxicologist who directs the National Health Policy Center; Eddy A. Bresnitz, M.D., a professor of medicine and epidemiology at the Medical College of Pennsylvania; and Arnold L. Brown, M.D., Dean of the University of Wisconsin Medical School.

formed no psychiatric evaluations or tests, and she is unqualified to do so. A5814, 4239, 4093.[12]

Defendants took a similar tack in attempting to discredit the opinions of Dr. Zahalsky, attacking first his qualifications as an expert, and then challenging the bases for his scientific opinions that plaintiffs had suffered immune system damage as a result of having been exposed to PCBs. Insofar as Dr. Zahalsky's credentials are concerned, defendants point out that he claimed a specialty in immunology, but had completed only one graduate-level course that included immunology. A5877. Zahalsky conceded his lack of expertise in epidemiology, A5888, toxicology, A5891, and medicine, *id.*, and admitted that because he is not a medical doctor, he is not qualified to examine patients, perform clinical tests, or render differential diagnoses. A6010, 5913.

At his deposition, Dr. Zahalsky offered diagnoses of immune system damage in a number of plaintiffs, even though he had not tested any of the plaintiffs, and instead simply assumed that plaintiffs had elevated PCB exposure. A 6022, 6054-55, 6058-59. He admitted that his opinions could be validated only by a series of tests that he designed, and further noted that these tests had not yet been performed. In attempting to show the lack

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[12] Defendants also attacked with specificity the opinions that Dr. Barsotti offered with respect to each individual plaintiff. For instance, they observed that she attributed plaintiff Patricia Ingram's asthma to PCB exposure, even though no one else has ever claimed that PCBs can cause asthma, and even though Ingram has a family history of asthma. A5156, 5161. They point out that Barsotti lists PCBs as a substantial factor in causing Charles Stanbach's stomach cancer, although Stanbach died at age 66, leaving no medical records indicative of PCB exposure. A5529. They also criticize her for not attempting to rule out the many genetic, dietary, and socioeconomic risk factors which could have contributed to his disease. A5559-60, 5812. Finally, defendants contend that this failure to rule out alternative causes renders Barsotti's testimony that PCBs caused certain ailments of seven other plaintiffs useless. A5380, 5633-34, 5741-45, 5842-43, 5548-49, 5551, 5557, 5806-12, 5856-58, 5352-54.

of scientific approval for the proposition that PCBs damage the immune system, defendants point to Zahalsky's own somewhat cryptic statement that if his tests should support such a conclusion, "then I will have done something with the clinical immunologists that has not yet been done." A6003.

Defendants also noted that all of the studies relied upon by Zahalsky were either animal studies or human studies arising from the Yusho and Yu Cheng incidents. Defendants argue that reliance upon the Yusho and Yu Cheng studies is scientifically inappropriate because the PCB contamination in those incidents was intermingled with exposure to and ingestion of PCDFs, which defendants characterize as a far more toxic chemical. Indeed, even one of plaintiffs' experts opined that the toxicity of PCDFs is "500 to 2000 times greater" than that of PCBs. A8907. Further, they rely on a Public Health Service comment that there appears to be general agreement in the scientific community that PCDFs "contributed significantly" to the adverse health effects analyzed in the Yusho and Yu Cheng studies. Moreover, Zahalsky was generally unable to specify supporting authorities for his opinions, *see, e.g.*, A6267, and often simply assumed that the existence of symptoms in plaintiffs evidenced exposure to PCBs. A6275. Zahalsky himself characterized his opinion as a "hypothesis" or "statement of expectation." A6332-34.

Defendants also submitted an affidavit signed by twelve physicians and scientists who had reviewed all existing medical and scientific knowledge regarding PCBs. The affidavit criticized Zahalsky's results, noting that "one may not conclude to a reasonable degree of medical and scientific certainty that PCBs can cause immune system disorders." A3814. Several of the individual defense experts then criticized Zahalsky's work directly. One expert stated that because Zahalsky is neither an immunologist nor a medical doctor, he is not qualified to diagnose

human illness. A4252. Another expert decried as false the claim that the scientific literature supported Zahalsky's position, and asserted that Zahalsky's attempted extrapolations from the existing literature were "scientifically improper." A9940. Zahalsky's methodology was described as "scientifically inadmissible" because of its failure to obtain basic data, its lack of control groups, and its inadequate histories. And one expert opined that "[n]o doctor would rely on the tests described in the Zahalsky affidavit for any purpose whatsoever." A9944.

Defendants likewise criticized the opinions of Dr. Shubin, who offered causation testimony in the *Cunningham* and *Reid* cases. Defendants objected to Shubin's conclusions that plaintiffs' injuries were caused by PCBs because: (1) his diagnosis conflicted with diagnoses of other physicians who had previously examined plaintiffs, A6723; and (2) his diagnosis was based on a method that improperly assumed the injuries to be caused by PCBs. A6394. As with Dr. Barsotti, defendants also registered more particular complaints regarding the individual diagnoses. When Shubin cited PCBs as the cause of Matthew Cunningham's hypertension, defendants argued that he had failed to consider other factors, including Cunningham's family history of hypertension, his obesity, and his high blood sugars. A6636-46. In addition, Shubin was unable to point to any studies showing a direct causal relationship between PCB exposure and hypertension. A6623-24. Shubin attributed Cunningham's Parkinson's Disease and eventual death to PCB exposure, even though previous doctors had determined the Parkinson's Disease to have been caused by the use of psychotropic drugs, and even though Shubin did not know the circumstances of Cunningham's death. A6729-31, 6438-40.

Defendants cited similar flaws in Shubin's diagnoses of Bessie Cunningham and William Reid. Shubin concluded that Ms. Cunningham's four spontaneous abor-

tions were related to PCB exposure, although he knew neither the circumstances surrounding the abortions, nor even when in the past forty years they had occurred. A6757-63. Shubin opined that a host of illnesses allegedly suffered by William Reid were the result of PCB exposure, A3285-91, although he found no PCBs in Mr. Reid's blood, A3287, and did not rule out other possible causes, such as smoking. A3289. Defendants also objected to Shubin's reliance on animal studies and the Yusho and Yu Cheng incidents.

Some of the same experts who criticized Dr. Barsotti's work also criticized Dr. Shubin's. They characterized his opinions as "conjectural guesses," A4333, which "fail adequately to consider multiple etiologic factors, as well as obvious differential diagnoses," A4118, and "would not withstand review by a qualified panel of his peers." A4119. One expert stated that because Shubin's opinions "have no basis in factual observation or in a plausible hypothesis, [they are] devoid of scientific justification." A4333.

Similarly suspect, according to defendants, are the opinions of Dr. DiGregorio, whom defendants criticize for offering a "certain" opinion that plaintiffs suffered from anxiety and fear of future harm as a result of PCB exposure, even though he never conducted a mental status examination, took a psychiatric history, or reviewed any medical records. A7089, 7132, 7140. Indeed, DiGregorio acknowledged that his diagnoses were only preliminary, and that further testing would have to be conducted. A7219-20, 7266, 7297. In his own words, DiGregorio saw each plaintiff only "for a brief period of time," A7152, "never reviewed any medical records of anyone," A7216, and was unable "to establish any physical findings yet." A7160. He nevertheless offered the opinion with respect to five of the plaintiffs, that "until otherwise proven," *see* A7169, 7185, whatever ailments they had were caused by PCBs. Defendants argue strenuously

that these opinions are improper, not only because they are based on insufficient information, but because, in every case, the doctor failed to rule out other possible causes for the injuries. They view the failure to conduct a conclusive differential diagnosis as a fatal flaw in DiGregorio's opinion.

Defendants also objected to the opinions offered in each of the four supplemental affidavits offered by plaintiffs in response to the joint motion for summary judgment. Defendants criticized Dr. Nisbet as being unqualified to offer an opinion that was, in any event, unsupported. Nisbet's attempt to use a conversion factor to determine PCB blood level from adipose tissue levels was, defendants argue, indefensible because it was based on no published or peer-reviewed studies, and is in fact contradicted by both the Public Health Service's *Toxicological Profile*, A9818, 4412, and plaintiffs' own expert, Dr. DiGregorio. A7043. Defendants characterize Nisbet's method as "assumptions plus arithmetic," and assert that his conversion factor is proven wrong by physical evidence that plaintiffs whose blood levels and adipose tissue levels were measured did not reflect the blood levels that would have been expected using Nisbet's ratio to extrapolate from tissue burden. See Appellees' Br. at 88-89 n.88. Defendants also apply these criticisms to the opinions of Dr. Simon, whose testimony overlapped with that of Dr. Nisbet.

Defendants roundly criticize Dr. Calesnick's opinion on medical monitoring as an "eleventh-hour" affidavit that was no more than a "one-sentence conclusion asserting simply, with no reasons whatsoever, that 'these Plaintiffs have been exposed to PCBs,' and that there was 'a potential for them to sustain injuries from PCB exposure.'" *Id.* at 93 n.93, 39. Defendants object to the admission of this testimony as (1) conclusory and unsupported; (2) improper opinion testimony because Calesnick was not formally offered as an expert; and (3)

irrelevant because Pennsylvania law does not recognize a cause of action for the cost of medical monitoring. *Id.* at 94.

Finally, defendants challenge the affidavit of Dr. Nicholson, who claimed that the results of his "meta-analysis" established a causal connection between PCB exposure and various of the plaintiffs' injuries. Defendants submit that Nicholson's submission is irrelevant because none of the plaintiffs alleges injuries for which Nicholson proffered a causal connection. More importantly, defendants argue that Nicholson's entire concept of meta-analysis, for which the only cited support is a non-peer-reviewed pamphlet written by Nicholson himself, is scientifically flawed. Nicholson's study found a causal connection between PCB exposure and human illness even though none of the studies he reviewed in compiling the meta-analysis revealed such a connection.[13] Defendants offered a counteraffidavit stating that by omitting from his review data that was inconsistent with his conclusions, Nicholson had produced a scientifically invalid study. A9946-50.

IV. THE DISTRICT COURT'S OPINION

The district court's opinion is devoted primarily to a discussion of the opinions of plaintiffs' experts. The court seems to have envisioned plaintiffs' experts as relying on three primary sources for their testimony: (1) animal studies purporting to show the deleterious health effects of PCBs; (2) studies employing data from the Yusho and Yu Cheng studies; and (3) their own opinions and research. With one or two exceptions explained below, the court analyzed this evidence pursuant to Fed. R. Evid. 703, which provides that facts or data not otherwise admissible in evidence may nevertheless serve as the basis for an expert opinion if the information is "of a type

[13] One of the studies did suggest a possibility that PCB exposure in high doses may cause skin irritation.

reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." The court appears to have excluded the bulk of the expert opinion under Rule 703.

With regard to the animal studies, the court's analysis was bifurcated, discussing first whether it could look beyond an expert's assertion that his opinion is reasonably relied upon by experts in the field, and second whether animal studies are a proper basis for an opinion about causation. The court answered the first question readily, concluding that an expert's opinion on the reasonableness of his or her own data could not be dispositive or Rule 703's limitation would be meaningless. In reaching this conclusion, the court distinguished this court's opinion in *In re Japanese Electronic Products Antitrust Litigation*, 723 F.2d 238 (3d Cir. 1983), *rev'd on other grounds sub nom., Matsushita Elec. Ind. Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574 (1986), which held, *inter alia*, that a court may not ignore an expert's uncontradicted testimony that his opinions are "of a type reasonably relied upon by experts in the field." *Id.* at 276. The court reasoned that, unlike *Japanese Electronics*, in the present case "we have very convincing evidence on the record that says that these studies are irrelevant." A10108. Apparently relying on that evidence, the court proceeded to exclude the animal studies. However, the court neither detailed the "very convincing evidence" indicating that the studies are "irrelevant," nor explained why the relevancy of the studies pertains to their reliability under Rule 703. The opinion is similarly silent as to precisely which expert opinions it meant to exclude in this manner.

The court's consideration of the Yusho and Yu Cheng studies as possible bases for expert opinions as to causation is similarly abbreviated. The court's holding is found in the following two sentences:

> It does seem clear that the consensus conclusion from the scientific literature is that the diseases

> that occurred in the victims of these incidents were caused by the ingestion of highly toxic PCDFs with their food and is not evidence of the effects of PCBs. Therefore, for the same reasons as addressed above regarding animal studies, I will exclude from evidence any expert opinion based on studies of the Yusho or Yu Cheng incidents.

A10,108. Again, the court did not state which of the expert opinions were tainted by reliance on these studies or which opinions offered in rebuttal suggested a "consensus conclusion" indicating unreliability.

After excluding these two significant sources of evidence, the court turned to its third category, plaintiffs' experts' own research results not based on animal studies or the Yusho and Yu Cheng incidents. Before analyzing in a particularized manner the opinions of the individual experts, it noted that:

> Even if I found that plaintiffs' experts['] testimony reached the level of being probative, I would rule to exclude it on the basis of Rule 703 and 403 as "unhelpful" and more prejudicial than probative.

A10111 (citation omitted). Nonetheless, the opinion considered each of the individual expert opinions, beginning with that of Dr. Barsotti.

The court noted that Dr. Barsotti:

> . . . finds PCB caused hypertension and asthma even in people who have family histories of hypertension and asthma. She finds that PCBs caused the plaintiffs emotional distress, despite the fact that her area of expertise has nothing to do with emotional diseases and she has only talked to one of the plaintiffs. She claims that, by studying the plaintiffs' medical histories, she excluded other causes of these diseases, but she is not a medical doctor and is not trained in differential diagnosis.

A10,112. Although certain factual findings may be implicit in the court's discussion (for example, that some

plaintiffs have family histories of hypertension and asthma, and that Barsotti talked with only one plaintiff), the court never explained the basis for its decision to exclude Barsotti's opinion.[14]

The court's analysis of other experts including doctors Zahalsky, DiGregorio, Shubin and Allen, was comparable in that it elucidated the potential flaws in the doctors' testimony but failed to make definitive admissibility findings. However, the court gave more detailed consideration to the affidavits filed by plaintiffs in response to the summary judgment motion, including the opinions of Dr. Nisbet and Dr. Simon. The court provided a summary of both doctors' attacks on the ATSDR study, and criticized their opinions as follows:

> Dr. Simon does not give a basis for his statement that the background PCB blood burden can be calculated from the [National Human Adipose Tissue Survey], Drs. Simon and Nesbit evidently believe that their blood to adipose tissue formula is over the number of studies that defendants cite that indicate a PCB blood background amount directly by measuring it. However, the only reason they give for not believing them is that the NHATS is more recent. However, the NHATS ended in 1983 and some of the defendants' studies are more recent than that. Neither doctor cites any study that measures PCBs in the bood directly or cites a basis for calculating blood burden from adipose tissue burden. Further, there are some plaintiffs in our case who have had both blood tests and adipose tissue tests and they do not reflect the 20 to 250 times relationship that these experts claim.

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[14] An exception to this observation is the court's exclusion of Dr. Barsotti's opinion "tracing" the PCBs in the plaintiffs' bodies to the Paoli railyard though gas chromatography. In that instance, the court made clear that Barsotti's testimony would be excluded because she "is not a chemist," and such conclusions are therefore "beyond the scope of her expertise." A10, 112. *But see infra* note 15.

A10,119. Nonetheless, the court did not declare these observations to be grounds for excluding the opinions, and did not even state whether it excluded these opinions.[15]

The court next addressed the affidavit of Dr. Nicholson, whose "meta-analysis" it analyzed under the "novel scientific evidence" standards of *United States v. Downing*, 753 F.2d 1224 (3d Cir. 1985). *Downing* requires that admissible scientific techniques be reliable, be of a sort that will not mislead juries, and have a sufficient connection to the particular factual issues in the case.[16] In the court's view, all three *Downing* factors weighed against admission of the affidavit. The court reasoned that:

> [t]he reports of defendants' experts advance convincing reasons why meta-analysis as a technique, and this meta-analysis in particular, is not reliable. Dr. Nicholson's report has not been peer-reviewed or accepted by anybody in particular, even the Ontario Ministry of Labor [for whom the report was compiled]. There is a possibility that Dr. Nicholson's testimony would confuse the jury because of its scientific nature and his credentials so they would make more of it than it actually deserved.
>
> The third factor is the most influential in this determination. The conclusion of Dr. Nicholson's report is that there was "substantial evidence for a

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[15] The quoted passage is immediately followed by the court's reflection that "I feel compelled to note further that I see nothing in Dr. Nisbet's curriculum vita that would qualify him to testify as an expert in this area." It is not clear from the opinion whether this statement is mere dicta, or is intended to exclude the testimony under Rule 702. The district court made similarly cryptic indictments of Dr. Barsotti's qualifications to make psychiatric diagnosis, A10112, and Dr. Zahalsky's qualifications to perform differential diagnoses, A10112, A10123.

[16] For a more complete discussion of *Downing*, *see* Part VI.C2 below.

> causal association between excess risk of death from cancer of the liver, biliary tract and gall bladder and exposure to PCBs." Dr. Nicholson's report could not be the basis for anyone to say with reasonable degree of scientific certainty that some particular person's disease, not cancer of the liver, biliary tract or gall bladder, was caused by PCBs.

A10,121-2. It would thus appear that the district court intended to exclude Nicholson's affidavit as based upon an inadmissible scientific technique.[17]

The last expert the court considered is Dr. Calesnick, who testified that the plaintiffs he examined have the potential to suffer harm from PCB exposure, and should therefore be monitored regularly to protect their health. The court characterized Calesnick's testimony as being "strikingly similar to the opinion offered in *Martin v. Johns Manville Corp.* and ruled inadmissible by the Pennsylvania Supreme Court." A10,123.[18] It then noted that because *Martin* "was an asbestos case, and it has been epidemiologically proved that asbestos exposure can cause cancer, that doctor might have had more of a basis for his opinion." *Id.* However, the court did not explicitly state that it was excluding Calensnick's testimony, much less why it might be excluding it. Indeed, later in the opinion, the court barred the entire medical monitoring claim, stating that "the testimony of Dr. Calesnick

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[17] The court added that "even if Dr. Nicholson's testimony was admissible despite being a novel scientific technique, it would be difficult to understand how it was relevant." A10122. Whether the court intended a Rule 402 relevancy exclusion is unclear.

[18] In *Martin*, 508 Pa. 154, 164-65, 494 A.2d 1088 (1985), the court excluded a doctor's testimony that, based on the plaintiff's "history of exposure to asbestos together with his one blood-spitting episode" the plaintiff might have had cancer at the time the doctor examined him. That testimony, the court ruled, was "not probative of the fact for which appellee now says it is offered, *i.e.*, that appellee faced a substantially increased risk of contracting cancer." *Id.* at ——, 494 A.2d at 1094.

and the other plaintiffs' experts who testif[ied] regarding the risk of future injury is insufficient to support it under Pennsylvania law." A10129. This comment suggests that Calesnick's opinion was admitted, but did not raise a genuine issue of fact deemed "material," Fed. R. Civ. P. 56(c), under Pennsylvania law.

Thus, the court appears to have excluded almost all of plaintiffs' expert testimony. The Yu Cheng, Yusho and animal studies appear to have been excluded as not reasonably relied on by experts in the field, under Rule 703, and the opinions of various experts appear to have been excluded either on the same grounds or because the district court found them to be unqualified under Rule 702. Dr. Nicholson's testimony was excluded as based upon an unreliable scientific technique under Rule 702.

Having concluded its discussion of the evidentiary issues, the court turned its attention to the summary judgment motion itself, positing that in order to survive a motion for summary judgment, plaintiffs must establish a genuine issue of fact with respect to their prima facie case, which the court defined as including the following four elements:

> 1) that defendants released PCBs into the environment; 2) that plaintiffs somehow ingested these PCBs into their bodies; 3) that plaintiffs have an injury; 4) that PCBs are the cause of that injury.

A10,126-7.

The first element was uncontested. Observing that the second question depends on whether the plaintiffs have been exposed to PCBs to a greater degree than has the general population, the court analyzed the issue as follows:

> Either plaintiffs are right and they have more PCBs in their bodies than the rest of us, or defendants are right and they do not. If they do have an

> unusually high amount of PCBs, circumstantial evidence indicates where they came from.
>
> However, the only legally admissible evidence in this case is that they do not. The plaintiffs have certainly failed to carry their burden to prove that they do. For the reasons discussed above, plaintiffs evidence to the contrary is inadmissible. Since the plaintiffs cannot demonstrate that they have been more heavily exposed to PCBs than the general population, they cannot recover.

Id. With respect to the third issue, whether plaintiffs have an injury, the court concluded that "plaintiffs must point to some health problem that they have or they are out of court under Pennsylvania law. If the best they can do is possibility of future harm, emotional distress, or the mere fact that they have PCBs in their body, then those plaintiffs cannot recover." *Id.*

Finally, the opinion divided the fourth issue, causation, into three separate considerations. First, the court stated, without particularization, that plaintiffs' expert opinions on causation were inadmissible because they lacked a sufficient scientific foundation. It is unclear whether the court meant to exclude all of the plaintiffs' experts on this basis. Second, the court noted that many of these experts "seem to have very little formal academic training in the areas in which they testify," thereby raising the question whether these experts "really are experts." However, the court concluded that because defendants failed to attack the experts systematically and neglected to brief the question, the issue would not be considered.[19] Third, the court pointed out that plaintiffs' experts, for the most part, did not provide testimony eliminating other possible causes of the various afflic-

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[19] This holding seems in tension with the explicit exclusion of Dr. Barsotti's testimony on these same grounds, *see supra* note 14 and accompanying text, and the comments about the qualifications of Doctors Nesbit and Zahalsky, *see supra* note 15.

tions, i.e. differential diagnoses. None of the plaintiffs' medical doctors rendered differential diagnoses, and plaintiffs' experts who did were Ph.D.'s who, the court declared, are not trained or qualified to conduct differential diagnoses. Again, it is unclear whether the court was excluding this evidence, and if so, for lack of qualification or on some other ground.

After dealing briefly with a number of miscellaneous issues (discussed below in Sections VIII and IX), the court concluded the opinion with a series of short paragraphs specifying the injury claims of each individual plaintiff, but granting summary judgment to defendants on all claims. In sum, the district court opinion appears to have excluded almost all of the plaintiffs' evidence and then went on to determine whether plaintiffs, with almost none of their evidence left in the record, met their burden on the contested issues of exposure to PCBs, injury, and causation. Not surprisingly, given the consequent lack of evidence, the court found that the plaintiff had not met its burden on any of these issues. It therefore, granted summary judgment for defendants.

V. MEDICAL MONITORING

Because it bears on the question of what evidence is admissible, we turn first to the viability of certain plaintiffs' "medical surveillance," or "medical monitoring," claims, by which plaintiffs sought to recover the costs of periodic medical examinations that they contend are medically necessary to protect against the exacerbation of latent diseases brought about by exposure to PCBs. Neither the Pennsylvania Supreme Court nor the Pennsylvania Superior Court has decided whether a demonstrated need for medical monitoring creates a valid cause of action.[20] Therefore, sitting in diversity, we must pre-

[20] The one Pennsylvania trial court to have considered this type of claim allowed it to proceed. *See Habitants Against Landfill Toxicants v. City of York*, No. 84-S-3820 (Pa. York Co. May 20,

dict whether the Pennsylvania Supreme Court would recognize a claim for medical monitoring under the substantive law of Pennsylvania, and if so, what its elements are. *See Erie R.R. Co. v. Tompkins*, 304 U.S. 64 (1938).

Medical monitoring is one of a growing number of nontraditional torts that have developed in the common law to compensate plaintiffs who have been exposed to various toxic substances.[21] Often, the diseases or injuries caused by this exposure are latent. This latency leads to problems when the claims are analyzed under traditional common law tort doctrine because, traditionally, injury needed to be manifest before it could be compensable. Thus, plaintiffs have encountered barriers to recovery which "arise from the failure of toxic torts to conform with the common law conception of an injury." Note, *Medical Surveillance Damages*, *supra* note 20, at 852.

Nonetheless, in an effort to accommodate a society with an increasing awareness of the danger and potential injury caused by the widespread use of toxic substances,[22]

1985), 15 Envtl. L. Rep. 20,937 (allowing an action seeking relief in the form of a medical surveillance trust fund). For the reasons expressed, below in note 22, we believe that *Peterman v. Techalloy Co., Inc.*, 29 Pa. D. & C.3d 104 (Mont. Co. 1982), a Pennsylvania trial court decision, which denied relief, is distinguishable because plaintiffs in that case requested relief in the form of a trust fund for future medical expenses, including, presumably, medical treatment, not just medical surveillance.

[21] *See generally* Note, *The Inapplicability of Traditional Tort Analysis to Environmental Risks: The Example of Toxic Waste Pollution Victim Compensation*. 35 Stan. L. Rev. 575, 576-78 (1983) (collecting cases); Note, *Medical Surveillance Damages: A Solution to the Inadequate Compensation of Toxic Tort Victims*, 63 Ind. L. J. 849 (1988) (same).

[22] The necessity of addressing problems of toxic exposure become [*sic*] particularly important with the continued widespread use of chemicals in American industrial and agricultural development. One commentator has pointed out that:

> there are approximately 50,000 hazardous waste sites nationwide. In all, over 65,000 chemicals are in commercial use today

courts have begun to recognize claims like medical monitoring, which can allow plaintiffs some relief even absent present manifestation of physical injury. More specifically, in the toxic tort context, courts have allowed plaintiffs to recover for emotional distress suffered because of the fear of contracting a toxic exposure disease, *see, e.g., Sterling v. Velsicol Chemical Corp.*, 855 F.2d 1188, 1206 (6th Cir. 1988) (applying Tennessee law), the increased risk of future harm, *see generally*, Note, *Decreasing the Risks Inherent in Claims for Increased Risk of Future Disease*, 43 U. Miami L.Rev. 1081 (1989), and the reasonable costs of medical monitoring or surveillance, *see, e.g., Ayers v. Township of Jackson*, 106 N.J. 557, 525 A.2d 287 (1987); *Burns v. Jaquays Mining Corp.*, 156 Ariz. 375, 752 P.2d 28 (Ct.App. 1988); *Merry v. Westinghouse Electric Corp.*, 684 F.Supp. 847 (M.D.Pa. 1988); *Villari v. Terminix International, Inc.*, 663 F. Supp. 727 (E.D.Pa. 1987).[23]

It is easy to confuse the distinctions between these various non-traditional torts. However, the torts just mentioned involve fundamentally different kinds of injury and compensation. Thus, an action for medical monitoring seeks to recover only the quantifiable costs of

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> which have not been tested for their effects on human health or the environment. According to varying estimates, workplace exposure to hazardous substances alone accounts for from five percent to as much as thirty-eight percent of all cancers.

Note, *Medical Surveillance Damages: Using Common Sense and the Common Law to Mitigate the Dangers Posed by Environmental Hazards*. 12 Harv. Envtl. L. Rev. 265, 265 (1988) (footnote omitted).

[23] In addition, several courts have modified the traditional rules discussed above to better serve in the toxic tort context. *See, e.g., Ayers*, 106 N.J. at 584, 525 A.2d at 300 (stating that "neither the statute of limitations nor the single controversy rule should bar timely causes of action in toxic-tort cases instituted after discovery of a disease or injury related to tortious conduct, although there has been prior litigation between the parties of different claims based on the same tortious conduct").

periodic medical examinations necessary to detect the onset of physical harm, whereas an enhanced risk claim seeks compensation for the anticipated harm itself, proportionately reduced to reflect the chance that it will not occur. We think that this distinction is particularly important because the Pennsylvania Supreme Court has expressed some reluctance to recognize claims for enhanced risk of harm. In *Martin v. Johns-Manville Corp.*, 508 Pa. 154, 494 A.2d 1088 (1985), the court made clear that a plaintiff in an enhanced risk suit must prove that future consequences of an injury are reasonably probable, not just possible. *Id.* at 165 n.5, 494 A.2d at 1094 n.5.

Martin does not lead us to believe that Pennsylvania would not recognize a claim for medical monitoring, however. First, the injury that the court was worried about finding with reasonable probability in *Martin* is different from the injury involved here. The injury in an enhanced risk claim is the anticipated harm itself. The injury in a medical monitoring claim is the cost of the medical care that will, one hopes, detect that injury.[24] The former is inherently speculative because courts are forced to anticipate the probability of future injury. The latter is much less speculative because the issue for the jury is the less conjectural question of whether the plaintiff needs medical surveillance. Second, the Pennsylvania Supreme Court's concerns about the degree of certainty required can easily be accommodated by requiring that a jury be able to reasonably determine that medical monitoring is probably, not just possibly, necessary.

Defining injury in this way is not novel. *Friends for All Children, Inc. v. Lockheed Aircraft Corp.*, 746 F.2d

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[24] Once the injury is detected, the plaintiff may or may not have a cause of action against the same defendant for the injury itself. *See generally* Note, Claim Preclusion in Modern Latent Disease Cases: A Proposal for Allowing Second Suits, 103 Harv. L. Rev. 1989 (1990). Because that situation is not before us, we do not reach it.

816 (D.C.Cir. 1984), the court, in recognizing a claim for medical monitoring damages for children exposed to the depressurization of an airplane cabin, noted that "[i]t is difficult to dispute that an individual has an interest in avoiding expensive diagnostic examinations just as he or she has an interest in avoiding physical injury." *Id.* at 826. *See also, Laxton v. Orkin Exterminating Co.*, 639 S.W.2d 431 (Tenn. 1982) (ingestion of contaminated water requiring testing held to be injury in itself, even though ingestion found to be harmless).

Similarly, in *Askey v. Occidental Chemical Corp.*, 102 A.D.2d 130, 477 N.Y.S.2d 242 (1984), the court analyzed the issue as follows:

> Damages for the prospective consequences of a tortious injury are recoverable only if the prospective consequences may with reasonable probability be expected to flow from the past harm. Consequences which are contingent, speculative, or merely possible are not properly considered in ascertaining damages. If a plaintiff seeks future medical expenses as an element of consequential damage, he must establish with a degree of reasonable medical certainty through expert testimony that such expenses will be incurred.
>
> In light of the foregoing, it would appear that under the proof offered here persons exposed to toxic chemicals emanating from the landfill have an increased risk of invisible genetic damage and a present cause of action for their injury, and may recover all "reasonably anticipated" consequential damages. The future expense of medical monitoring could be a recoverable consequential damage provided that plaintiffs can establish with a reasonable degree of medical certainty that such expenditures are "reasonably anticipated" to be incurred by reason of their exposure.

Id. at 136-37, 477 N.Y.S.2d at 247 (citations omitted). Thus the appropriate inquiry is not whether it is reasonably probable that plaintiffs will suffer harm in the future, but rather, whether medical monitoring is, to a reasonable degree of medical certainty, necessary in order to properly diagnose the warning signs of disease.[25]

Federal district courts, sitting in diversity, have addressed the medical monitoring issue under Pennsylvania law. In *Villari v. Terminix International, Inc.*, 663 F.Supp. 727 (E.D.Pa. 1987), the court allowed plaintiffs, who had presented sufficient medical evidence of present physical injuries resulting from exposure to an allegedly

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[25] Our research has yielded only two cases in which courts have purported to disallow recovery based on a medical monitoring theory. Both cases are distinguishable. In *Rheingold v. E.R. Squibb & Sons*, No. 74 Civ. 3420 (S.D.N.Y. Oct. 8, 1975), the court rejected a class action claim for what might more accurately be called "medical management" damages. Plaintiffs, who had used DES during pregnancy, sought to establish a fund to finance the periodic examinations of plaintiffs' affected female offspring, as well as, *inter alia*, the medical *treatment* of "such girls as develop or show any propensity toward development of (vaginal cancer or other related conditions)." *Id.* at 7. This remedy is far broader than a mere claim for medical monitoring as we have defined it. Moreover, to the extent that the *Rheingold* court interpreted New York law as requiring actual injury as a prerequisite to recovery, such reasoning is seriously called into question by subsequent New York state appellate court decisions to the contrary, *see Askey, supra.*

In *Morrissy v. Eli Lilly & Co.*, 76 Ill. App. 3d 753, 394 N.E.2d 1369 (1979), the plaintiff explicitly characterized their claims as requesting, *inter alia*, that defendants "establish and maintain a fund of money reasonably calculated to compensate all class members for such medical expenses which have been and will continue to be incurred due to the physiological damage done by DES," *id.* at 757, 394 N.E.2d at 1373. The court held that "[t]he nexus thus suggested between exposure to DES in utero and the possibility of developing cancer or other injurious conditions in the future is an insufficient basis upon which to recognize a present injury." *Id.* at 761, 394 N.E.2d at 1376. However, like *Rheingold*, the plaintiffs' request in *Morrissy* was for treatment as well as monitoring. Thus, it is inapposite to the case at bar.

carcinogenic pesticide, to recover the costs of future medical surveillance. *Id.* at 735. The court required a showing of present physical injury and expressly refused to follow *Ayers*, which it characterized as holding that "the cost of future medical monitoring is a proper element of damages whenever medical testimony establishes the need for future monitoring." *Id.* at 735 n.5. However, because the plaintiffs in *Villari* had demonstrated sufficient physical injury, the question whether the cause of action could be sustained without it was not squarely raised.

Villari's putative physical injury requirement was rejected in *Merry v. Westinghouse Electric Corp.*, 684 F.Supp. 847 (M.D.Pa. 1988). In *Merry*, property owners whose wells had been contaminated by toxic substances sought recovery for, *inter alia*, the cost of medical surveillance. In denying defendant's motion for summary judgment, the court agreed with *Villari* that "a plaintiff need not exhibit symptoms of a disease before medical surveillance is sought," *id.* at 849, but disagreed to the extent that *Villari* required "*physical* injury before a claim for future medical monitoring can be maintained." *Id.* (emphasis in original). Consequently, *Merry* suggested that a medical monitoring action could be premised upon proof of exposure to hazardous substances resulting in the potential for injury and the need for early detection and treatment. *Id.* at 850.

We agree with *Merry*, and predict that the Supreme Court of Pennsylvania would follow the weight of authority and recognize a cause of action for medical monitoring established by proving that:

> 1. Plaintiff was significantly exposed to a proven hazardous substance through the negligent actions of the defendant.
>
> 2. As a proximate result of exposure, plaintiff suffers [*an*] **a significantly** increased risk of contracting a serious latent disease.
>
> 3. That increased risk makes periodic diagnostic medical examinations reasonably necessary.

4. Monitoring and testing procedures exist which make the early detection and treatment of the disease possible and beneficial.

These factors would, of course, be proven by competent expert testimony, *see Ayers*, 106 N.J. at 606, 525 A.2d at 312.

The policy reasons for recognizing this tort are obvious. Medical monitoring claims acknowledge that, in a toxic age, significant harm can be done to an individual by a tortfeasor, notwithstanding latent manifestation of that harm. Moreover, as we have explained, recognizing this tort does not require courts to speculate about the probability of future injury. It merely requires courts to ascertain the probability that the far less costly remedy of medical supervision is appropriate. Allowing plaintiffs to recover the cost of this care deters irresponsible discharge of toxic chemicals by defendants and encourages plaintiffs to detect and treat their injuries as soon as possible. These are conventional goals of the tort system as it has long existed in Pennsylvania.[25a]

Having established the applicable standard, we discuss below, in Part VII, whether summary judgment was properly granted for the defendants on the medical monitoring claim.

VI. EVIDENTIARY ISSUES

A. *Introduction*

To the extent that the district court actually excluded the bulk of plaintiffs' expert opinion evidence, our threshold question is whether it did so properly. As we have explained *supra*, at times, the text of the district court opinion, which attacks many of plaintiffs' expert opinions

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[25a] **In light of the statute of limitations problems caused by Pennsylvania law against splitting causes of action, we intimate no view as to whether a plaintiff who goes for medical monitoring must forego his or her claim for damages if and when the disease ultimately manifests itself.**

without formally excluding them, suggests that the court was merely describing, not excluding the testimony. However, at other times, the court appears to have excluded most if not all of the testimony. In view of the court's "bottom line," we will assume that the court excluded the challenged evidence. If these exclusions were proper, summary judgment would doubtless be appropriate because exclusion of the opinions would effectively eviscerate plaintiffs' case. However, whether that evidence was properly excluded at this stage of the proceedings is quite another question. We address first the adequacy of the district court's Fed. R. Evid. 703 analysis. We then turn to the district court's Rule 702 determinations, and then to its rather abbreviated reliance on Rule 403.

B. *Evidence Excluded under Rule 703*

1. Factual Inquiry

Although it stops short of giving the basis for a number of its rulings, the district court appears to have found that much of plaintiffs' expert opinion evidence, including the animal studies and the Yusho and Yu Cheng incidents, was unreliable and excludable under Rule 703.[26] However, its analysis did not track the Rule 703 protocols established by this court in *In Re Japanese Electronic Products*, 723 F.2d 238 (3d Cir. 1983), *rev'd on other grounds sub nom., Matsushita Electrical Industrial Co., Ltd. v. Zenith Radio Corp.*, 475 U.S. 574 (1986).

In *Japanese Electronics*, the district court had excluded expert testimony under both Rules 702 and 703, and granted summary judgment in favor of defendants. Reversing those rulings, this court took the opportunity to

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[26] Fed. R. Evid. 703 states:

> The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

provide the district courts with guidance in approaching such situations. Of specific relevance here is its holding that, in determining for purposes of Rule 703 whether the informational basis of an expert opinion is of a type reasonably relied upon by experts in the field, "[t]he proper inquiry is not what the court deems reliable, but what experts in the relevant discipline deem it to be." *Id.* at 276. Further, the court noted emphatically that "as a matter of law, the district court must make a factual inquiry and finding as to what data experts in the field find reliable. There is no discretion to forbear from making this inquiry and finding." *Id.* at 277. "[A] factual determination under Rule 104(a) . . . must be made when there is a factual dispute over such reliance." *Id.* at 276.

Japanese Electronics does not require that the "factual inquiry" take the form of an *in limine* or other hearing. It does make clear, however, that the district court must have a proper and reviewable foundation for making its admissibility findings. We can identify no such foundation here. With respect to the animal studies, the court seems to have excluded the expert testimony because it had "very convincing evidence on the record that says that these studies are irrelevant." However, the court did not make specific reference to the evidence in the voluminous record it has chosen to credit, did not reveal the theory on which it has rejected opinions to the contrary, and did not identify which opinions it means to exclude in this manner. Thus, we have no way of evaluating the district court's legal conclusion that the evidence was inadmissible under Rule 703 because we do not know what facts it relied on in making its legal determination. Moreover, it is not clear that the court was not merely choosing between opinions as opposed to excluding plaintiffs [*sic*] opinion on evidentiary grounds.[27]

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[27] As noted, the court may have meant to exclude the animal studies as irrelevant under rule 402 because even if they showed

The court's treatment of the Yusho and Yu Cheng incidents as a basis for expert testimony was similarly flawed. It stated that its decision to exclude opinions based on these incidents was compelled by a "finding" that "the consensus conclusion from the scientific literature is that the diseases that occurred in the victims of these incidents were caused by the ingestion of highly toxic PCDFs with their food and is not evidence of the effects of PCBs."[28] The court did not, however, specify what scientific literature or which consensus conclusion it was referring to, nor did it say which opinion it was excluding as inconsistent with the consensus conclusion. Moreover, the court did not even consider the record evidence that certain plaintiffs may have been exposed to PCDFs as well as PCBs.

For the foregoing reasons, the district court's evidentiary exclusions under Rule 703 cannot pass muster and must be set aside. Those rulings that do implicate facts or data which are the basis for expert opinion may be reconsidered in the remanded proceedings pursuant to the *Japanese Electronics* methodology.[29]

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correlation between PCBs and animal disease, they were not probative of a connection between PCB exposure and human disease. However, it made no such definitive ruling.

[28] As just noted with regard to the animal studies, the court's reasoning with regard to these two incidents seems to follow a relevancy rationale, not a Rule 703 unreliability rationale. There is no indication that the data from Yusho and Yu Cheng is unreliable. The court's concern appears to be more grounded in whether a study regarding the effect of PCDF's is relevant to this proceeding.

[29] Although, for the reasons explained, factfinding is a prerequisite to definite conclusions, it appears to this court that most of the data upon which plaintiffs' experts rely is "of a type reasonably relied upon by experts in the particular field," Fed. R. Evid. 703, and thus admissable [*sic*] under Rule 703. However, even if admissible under Rule 703, plaintiffs' experts may be using their data in an unreliable manner. As we explain *infra*, that is a Rule 702 question and much of plaintiffs' evidence may be excludable on that basis.

2. Process

Closely related to the question whether the district court conducted an appropriate and adequate factual inquiry is the question whether the court provided the plaintiffs with sufficient process for defending their evidentiary submissions. The adversarial process upon which our legal system is based assumes that a fact finder will give the parties an adequate opportunity to be heard; if it does not, it cannot find facts reliably. Thus the detailed factual record requirement, firmly entrenched in our jurisprudence, *Japanese Electronics supra; Indian Coffee Corp. v. Proctor & Gamble*, 752 F.2d 891, 895 (3d Cir.) *cert. denied*, 474 U.S. 863 (1985); *DeLuca v. Merrell Dow Pharmaceuticals, Inc.*, No. 89-5572 (filed Aug. 16, 1990), requires adequate process at the evidentiary stage, particularly when a summary judgment may flow from it. The district court did not afford that process here.

More precisely, notwithstanding the complexity of the matter, and the voluminous nature of the expert opinions, the district court did not give the plaintiffs sufficient opportunity to explore the issues upon which they were ultimately denied relief. First, the court [*rejected plaintiffs request for*] **failed to conduct** an *in limine* hearing.[29a] Second, it denied oral argument on the evidentiary issues and on the related summary judgment motion. Compounding these restrictions was a case management order which arguably did not give plaintiffs an adequate opportunity to discover defendants' expert positions.[30] Of particular significance, is the plaintiffs'

[29a] **The plaintiffs did not request an *in limine* hearing and in fact opposed it on the grounds that it was premature, i.e., they did not want to be forced into it before their discovery was complete. We emphasize, however, that the management of complex litigation may not be relegated to the lawyers but at all times remains the responsibility of the court. See Manual for Complex Litigation 2d § 20.1.**

[30] By its terms, the case management order granted plaintiffs three months within which to conduct discovery limited to "the

inability to contest the reasonableness of the data and techniques relied on by defendants' experts. Having no foreknowledge of the direction that the district court's opinion might take, the plaintiffs should have been given an opportunity to be heard on the critical issues before being effectively dispatched from court. An *in limine* hearing would have been quite manageable. At least some process should have been devised to afford plaintiffs a surrogate for that trial scenario where the equivalent evidentiary exclusion and adverse judgment might occur. On this ground alone, the summary judgment would have to be set aside.

C. *Evidence Excluded under Federal Rule of Evidence 702*

As noted, the district court apparently made the bulk of its exclusionary rulings under Rule 703. However, the court did, on several occasions, invoke Rule 702 either explicitly or implicitly. We deal now with those exclusions.

The court's Rule 702 exclusions can generally be divided into two categories; (1) rejection of the witness as unqualified to give expert testimony in the relevant field [31] and (2) rejection of the expert because, however qualified, he or she was relying on an unreliable scientific technique. The district court here made both kinds of Rule 702 exclusions.

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quantity and nature of the PCBs used at the Paoli Railyard and the health effects on Defendants' employees of exposure to PCBs." App. at 2958. This was to be followed by defendants' discovery of the evidence comprising plaintiffs' *prima facie* case on causation. All other discovery, including discovery by plaintiffs of defendants' experts, was stayed, and plaintiffs' motion to compel such discovery were [*sic*] denied.

[31] As pointed out *supra* note 19, these exclusionary holdings cannot be reconciled with the court's later statement that the question of plaintiffs' witnesses' qualification as experts would not be addressed by the opinion.

1. Expert Witness Qualifications

The court appears to have excluded much of Dr. Barsotti's testimony on the grounds that she is not a chemist, and is therefore unqualified to present an opinion based on gas chromatography tracing, or a medical doctor, and is therefore unqualified to present her opinion on what caused the plaintiffs [*sic*] emotional and physical injuries. A10112. Similarly, the court appears to have excluded much of Dr. Zahalsky's testimony regarding the effect of PCBs on human beings because "he is not trained in differential diagnosis."[32] *Id.* The court also noted that "Dr. Nesbit's curriculum vita [did not] qualify him to testify as an expert" in the area of whether the ATSDR study (which indicated that the level of PCBs in the plaintiffs [*sic*] body was typical of the American population) was accurate.

The district court's insistence on a certain kind of degree or background is inconsistent with our jurisprudence in this area. The language of Rule 702 and the accompanying advisory committee notes make clear that various kinds of "knowledge, skill, experience, training, or education," Fed. R. Evid. 702, qualify an expert as such. Interpreting the rule liberally, we recently held that a safety specialist who had received a master's degree in safety education and a doctorate in human factors and product safety design, could testify on whether the failure of the forklift manufacturer to put seatbelts in the forklift caused the death of the operator of a forklift which overturned, notwithstanding the fact that the expert was not an engineer. *Habecker v. Copperloy Corp.*, 893 F.2d 49 (3d Cir. 1990). *See also Knight v. Otis Elevator Co.*, 596 F.2d 84 (3d Cir. 1979) (expert may testify that unguarded elevator buttons constitute

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[32] We note that most, if not all of the evidence supporting Dr. Zahalsky's conclusions regarding causation are based on the Yusho and Yu Cheng studies. If those studies are excluded under Rule 703, then Dr. Zahalsky's qualifications as an expert may not be important.

a design defect despite that expert's lack of a specific background in the design and manufacture of elevators). *See also, Hammond v. Int'l Harvester Co.*, 691 F.2d 646 (3d Cir. 1982) (engineer, whose only qualifications were sales experience in the field of automotive and agricultural equipment and teaching high school automobile repair, was nevertheless permitted to testify in products liability action involving tractors).

Dr. Barsotti, a toxicologist with a Ph.D. in Pathology, has conducted extensive research in the toxicology of PCB's, and currently serves as the Chief of the Research Analysis Branch of the Agency for Toxic Substance [*sic*] and Disease Registry of the United States. Dr. Zahalsky has a Ph.D. in microbiology from New York University and teaches courses in immunology and human diseases. Dr. Nisbet has a Ph.D. in Physics from Cambridge University and has published numerous articles in the field of human exposure and the health risks attendant upon that exposure. A8768-70. In light of the liberal Rule 702 expert qualification standard, we hold that the district court abused its discretion [33] in excluding portions of Doctors Barsotti, Zahalsky and Nesbit's testimony simply because the experts did not have the degree or training which the district court apparently thought would be most appropriate.

2. Meta-Analysis

As noted, the district court also used Rule 702 to exclude the testimony of Dr. Nicholson because the court found that Dr. Nicholson's "meta-analysis" was an inadmissible novel scientific technique. Meta-analysis involves combining the results of different epidemiological studies done by other scientists, and re-analyzing the combined data to see if the data, *in toto*, renders different results than the individual studies done with a smaller data sample. Dr. Nicholson's meta-analysis is particularly im-

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[33] Decisions to exclude expert opinion evidence under Rule 702 are reviewed for abuse of discretion. *Knight*, 596 F.2d at 87.

portant in this case because it is one of the few pieces of direct evidence indicating that PCBs actually cause disease. If there is no evidence of causation in the record, then the plaintiffs cannot survive a motion for summary judgment.

Because the defendants challenge the technique of meta-analysis itself, in evaluating Dr. Nicholson's testimony the court properly invoked the standard announced by this court in *United States v. Downing*, 753 F.2d 1224 (3d Cir. 1985) for analyzing expert testimony based on novel scientific techniques.[34] However, the court's analysis under the *Downing* standard was inadequate.[35]

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[34] As we explained in *Downing*, a technique should be considered "novel" for purposes of Rule 702 whenever its reliability is not so well established as to warrant recognition by judicial notice. *Id.* at 1234.

[35] *Downing* requires a court that is:

> ruling upon the admission of (novel) scientific evidence, i.e. evidence whose scientific fundaments are not suitable candidates for judicial notice, conduct a preliminary inquiry focusing on (1) the soundness and reliability of the process or technique used in generating the evidence; (2) the possibility that admitting the evidence [will] overwhelm, confuse, or mislead the jury, and (3) the proffered connection between the scientific research or test result to be presented, and particular disputed factual issues in the case.

Id. at 1237 (footnote omitted).

We dismiss out of hand the district court's finding, under the second prong of *Downing*, that "Dr. Nicholson's testimony would confuse the jury because of its scientific nature and his credentials so they would make more of it than it actually deserved." A10121. What the second prong of *Downing* flags for concern is "a technique which has 'assume[d] a posture of mythic infallibility,'" *Downing*, 753 F.2d at 1239, quoting *Addison v. United States*, 498 F.2d 741, 744 (D.C. Cir. 1974). In other words, a technique that the jury will automatically assume, either because of its notoriety or its elaborate presentation, to be completely reliable, needs to be scrutinized by the court. Dr. Nicholson's meta-analysis does not fall into that category. His scientific presentation is not notably different than any other of the experts offered in this case—by either side. If Dr. Nicholson can be excluded under the second prong of *Downing*, then so could most of the experts in the case.

We begin our *Downing* analysis with the frank recognition that the determination whether expert testimony depends on a reliable "scientific technique." to be analyzed under Rule 702, or whether the basis for testimony is "facts or data . . . of a type reasonably relied upon by experts in the particular field," to be analyzed under Rule 703, *see supra*, is oftimes subtle if not strained, it can be difficult to determine whether the putative problem with scientific evidence lies in the underlying data itself or the method by which the data is analyzed. Non-scientifically trained courts are at a disadvantage in trying to categorize sophisticated scientific data.

While our recent decision in *DeLuca v. Merrell Dow Pharmaceuticals, Inc.*, No. 89-5572 (filed Aug. 16, 1990), does not lay the problem to rest, and the courts must grapple with it on a case by case basis, *DeLuca* announces an important rule by making clear that when it is a scientist's methodology that is being attacked in contrast to the data relied on, the court must analyze the reliability of that methodology under *Downing* (and Rule 702). As Judge Stapleton explained: "Rule 703 is satisfied once there is a showing that an expert's testimony is based on the type of data a reasonable expert in the field would use in rendering an opinion on the subject at issue; it does not address the reliability or general acceptance of an expert's methodology." *DeLuca*, slip op. at 26.

For purposes of this case, we agree with the district court that Dr. Nicholson's "meta-analysis" should be analyzed as a scientific technique under *Downing*. Defendants do not assert that the data that Dr. Nicholson used is not "relied upon by experts in the particular field," Rule 703. Indeed, the human epidemiological studies which Dr. Nicholson used in his meta-analysis are the same studies that defendants' experts use to show that PCBs do not cause human disease. Instead, defendants charge that meta-analysis is too unreliable to be accepted by a court. Thus, it is the reliability analysis that is critical here.

As we explained in *Downing*, the "helpfulness" requirement in Rule 702 "implies a quantum of reliability beyond that required to meet a standard of bare logical relevance." *Downing*, 753 F.2d at 1235. *See also DeLuca*, typescript at 38, quoting, 3 Weinstein's Evidence, ¶ 702(03), at 702-35 ("helpfulness turns on whether the expert's 'technique or principle [is] sufficiently reliable so that it will aid the jury in reaching accurate results' "). However, the reliability requirement must not be used as a tool with which the court excludes all questionably reliable evidence. The Federal Rules of Evidence "embody a strong and undeniable preference for admitting any evidence having some potential for assisting the trier of fact and for dealing with the risk of error through the adversary process." *DeLuca*, typescript at 38, citing *Barefoot v. Estelle*, 463 U.S. 880, 899 & 901 n.7 (1983); and *Downing*, 753 F.2d at 1241; and 3 *Weinstein's Evidence*, ¶ 702[02]-[03]. Therefore, in making reliability determinations, courts must err on the side of admission rather than exclusion.

At some point, however, even with the balance weighted as it is towards admissibility, courts must determine at what level evidence becomes "reliable enough." We think that the fact that the Rules Committee did not draft rules which provide that evidence need be 95% or 85% or even 51% accurate, is significant. Instead, Congress seems to have understood, as the cases and the commentators reflect, that "[t]he reliability inquiry . . . [must be] flexible and may turn on a number of factors." *Downing*, 753 F.2d at 1238. Applying that logic in this case, it is clear that if there were evidence in this record that meta-analysis is inaccurate as a mode of analysis—that the concept of combining raw data from different independent studies and re-analyzing it in total does not render accurate results—then there might be grounds for excluding meta-analysis.

There is no such evidence, however. As plaintiffs point out, hundreds of meta-analyses are done each year. Brief for Appellant at 92. Indeed, notwithstanding the prin-

ciple thrust of defendant's reliability argument before this court, defendants' own experts do not question the reliability of all meta-analyses; they question "the way in which Dr. Nicholson applied 'meta-analysis.'" A9948. There is some evidence that "half the time you shouldn't believe meta-analysis," Naylor, *Two Cheers for Meta-Analysis: Problems and Opportunities in Aggregating Results of Clinical Trials*, 138 Can. Med. Ass'n J. 891, 894 (1988), quoted in Brief of Appellee 64 and n.55, but that does not mean that meta-analyses are necessarily in error. It means that they are, at times, used in circumstances when they should not be.

The district court excluded Nicholson's report under the reliability prong of *Downing* because "Dr. Nicholson's report has not been peer-reviewed or accepted by anybody in particular, even the Ontario Ministry of Labor," A10121 (for whom it was done). In reaching this conclusion, the district court relied on an affidavit by one of the defense experts who stated that

> Dr. Nicholson's claim that his report has been peer-reviewed is inaccurate in the sense that the term 'peer review' is used by the scientific community. In fact, I am unaware that the report has ever been subjected to pre-publication review, and the report has never been published in the scientific literature.

This is an inadequate ground for excluding the testimony. First, "the Federal Rules of Evidence contain no requirement that an expert's testimony be based upon reasoning subjected to peer-review and published in the professional literature." *DeLuca*, typescript at 32. *See also Brock v. Merrell Dow Pharmaceuticals, Inc.*, 874 F.2d 307, 313, *modified per curiam* 884 F.2d 166 (5th Cir. 1989), *cert. denied*, 110 S. Ct. 1511 (1990). Second, Dr. Nicholson's own affidavit states that his report was reviewed by cooperating researchers and the Industrial Diseases Standards Panel. A9374-75. Moreover, Dr. Nesbit's affidavit demonstrates that he reviewed Dr. Nicholson's work and found it to be "a balanced assessment."

What we have, therefore, is a record that shows significant disagreement about whether this particular meta-analysis is reliable. But that too may implicate the *Downing* standard. If the allegation is that a reliable methodology was so altered as to skew the methodology itself, *Downing* would be the appropriate vehicle for evaluation. However, if the challenged procedure is more accurately described as an application of an accepted methodology, it is not the proper subject of a Rule 702-based exclusion, but is rather the subject of cross-examination of the expert and resolution by the jury. *See DeLuca*, slip op. at 31, n.15.

Assuming that Dr. Nicholson's meta-analysis is the proper subject of *Downing* scrutiny, the district court's decision is wanting because it did not make explicit enough findings on the reliability of Dr. Nicholson's meta-analysis to satisfy *Downing*. We decline to define the exact level at which a district court can exclude a technique as sufficiently unreliable. Reliability indicia vary so much from case to case that any attempt to define such a level would most likely be pointless. *Downing* itself lays down a flexible rule. What is not flexible under *Downing*, is the requirement that there be a developed record and specific findings on reliability issues. Those are absent here. Thus, even if it may be possible to exclude Dr. Nicholson's testimony, under *Downing*, as an unreliable, skewed meta-analysis, we cannot make such a determination on the record as it now stands. Not only was there no hearing, *in limine* or otherwise, at which the bases for the opinion of the contesting experts could be evaluated, the experts were not even deposed. All of the expert evidence was based on affidavits.

Assuming that the district court excluded what it thought to be an application of an accepted methodology, it did so on the basis of a credibility judgment—i.e., it believed defendants' experts that Dr. Nicholson's meta-analysis was not reliable, and disbelieved plaintiffs' ex-

perts who said that it was. This approach runs afoul of *DeLuca*, slip op. at 31, n.15, because credibility determinations are normally the province of the jury. If no reasonable person could believe Dr. Nicholson's brand of meta-analysis, it would presumably be excludable but we doubt that to be the case here. Under all these circumstances we cannot uphold, on this record, the exclusion of Dr. Nicholson's testimony.

We turn to the court's exclusion of the testimony under the third *Downing* factor (the connection or "fit" between the research and the factual issues in the case). Dr. Nicholson's research suggests increased risk of cancer of the liver, biliary tract and gall bladder. Because none of the plaintiffs have any of those ailments yet, the district court found Dr. Nicholson's research immaterial. We reject this reasoning because Dr. Nicholson's affidavit suggests that proof of an increased risk of liver cancer is probative of increased risk of other forms of cancer. Furthermore, as we explain *infra*, the district court's rejection of the medical monitoring claim must be reversed and therefore the increased risk of the cancers that Dr. Nicholson documents is material to the factual dispute in this case. If plaintiffs can prove that they are at an increased risk for these cancers because of exposure to defendants' products, then they may be able to prove that they are entitled to have defendants bear the increased medical monitoring costs incurred by those who are at an increased risk of cancer. Thus, the third *Downing* factor (the "fit") is also met, further supporting our conclusion that the district court's exclusion of Dr. Nicholson's expert opinion, on the present record, must be set aside.

3. Scientific Techniques of Other Experts

Defendants criticize the scientific data and/or method of most of plaintiffs' other experts, including Drs. Allen, Barsotti, Zahalsky, Shubin, and DiGregorio. *See supra* typescript at 34-36. These attacks are forceful and we

cannot say, at this point, that they are without merit. However, neither can we, at this point, accept those contentions, because to the extent that the attacks are grounded on Rule 703, there has not been adequate process under *Japanese Electronics*, and to the extent that they are grounded on Rule 702, there has not been adequate record development and fact-finning [*sic*] under *Downing*. That effort was not expended here. We cannot affirm what we caanot [*sic*] review; henne [*sic*], to the extent that the summary judgment was ased [*sic*] upon putative but unspoken exclusionary rulings, we must reverse and remand.

D. *Exclusion under Rule 403*

As noted *supra* Section VA2, it is not clear that the court actually excluded any opinions under Rule 403. The court at one point suggests that it is excluding all of the plaintiffs' expert opinion under Rule 703 and 403, but it is not clear how or why. What is apparent is that the district court did not conduct the careful balancing required by Rule 403 and the jurisprudence of this court. *See, e.g., United States v. Downing*, 753 F.2d 1224, 1243 (3d Cir. 1985) (declining to decide the Rule 403 question where the district court neither mentioned Rule 403 on the record nor "conducted the balancing required by that rule"); *United States v. Long*, 574 F.2d 761, 770 (3d Cir.) (Adams, J., concurring), *cert. denied*, 439 U.S. 985 (1978).

In *Downing*, while declining to prescribe any mandatory procedures for trial courts to follow in making preliminary admissibility determinations, we recognized that "the most efficient procedure that the district court can use . . . is an *in limine* hearing." *Downing*, 753 F.2d at 1241. We again decline to set forth mandatory rules for the trial court. However, we suggest that in complex litigation such as this, where there are numerous experts presenting voluminous testimony on the cutting edge of

scientific research, an *in limine* hearing may be a very useful tool in conducting both the inquiry and the fact-finding and balancing, which are the hallmarks of Rule 703 and 403 respectively.

Moreover, we stress that *pretrial* Rule 403 exclusions should rarely be granted. As we recently noted in *DeLuca, supra*, "if . . . testimony survives the rigors of Rule 702 and 703 . . ., Rule 403 is an unlikely basis for exclusion." Slip op. at 36. Excluding evidence as being more prejudicial than probative, at the pretrial stage is an extreme measure that is rarely necessary, because no harm is done admitting it at that stage. If a court believes evidence is irrelevant, it need only say so and discount it accordingly when it makes its summary judgment determination. However, a court cannot fairly ascertain the potential relevance of evidence for Rule 403 purposes until it has a full record relevant to the putatively objectionable evidence. We believe that Rule 403 [36] is a trial-oriented rule. Precipitous Rule 403 determinations, before the challenging party has had an opportunity to develop the record, are therefore unfair and improper.

In sum, we hold that in order to exclude evidence under Rule 403 at the pretrial stage, a court must have a record complete enough on the point at issue to be considered a virtual surrogate for a trial record. The record in this case clearly does not meet that standard and hence the district court's exclusion of evidence under Rule 403 must be reversed.

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[36] Fed. R. Evid. 403 states that:

> Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

VII. WAS SUMMARY JUDGMENT PROPERLY GRANTED

Because the district court excluded the bulk of plaintiffs' proffered evidence on causation, it had no difficulty concluding that plaintiffs had failed to produce sufficient evidence to survive summary judgment under the standards announced in the Supreme Court's noted trilogy. *Celotex Corp. v. Catrett*, 477 U.S. 317 (1986); *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242 (1986); and *Matsushita Electronic Industrial Co. v. Zenith Radio Corp.*, 475 U.S. 574 (1986). As we have explained, the district court erred in its exclusion of this evidence. However, defendants argue that even if we were to admit all of the evidence excluded by the district court, summary judgment would nonetheless be appropriate because plaintiffs are unable to create a genuine issue of material fact as to the required elements of the *prima facie* case on causation. Consequently, we must presume the admissibility of all of plaintiffs' proffered evidence, and determine sufficiency under the prevailing standards for summary judgment.

Under *Celotex*, a court must enter summary judgment when the nonmoving party "after adequate time for discovery . . . fails to make a showing sufficient to establish the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial."[37] 477 U.S. at 322. A party cannot survive

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[37] As we have already noted, *see supra* note 30 and accompanying text, appellants make a forceful argument that the case management order has prevented them from conducting full discovery, and that summary judgment was improperly granted because of the incompleteness of the record. *See Al-Khazaraft v. Saint Francis College*, 784 F.2d 505, 517 (3d Cir. 1986) (record incomplete for summary judgment purposes where plaintiff was unable to conduct full discovery), *aff'd on other grounds*, 481 U.S. 604 (1987); *Arnold Pontiac-GMC, Inc. v. General Motors Corp.*, 786 F.2d 564, 568 (3d Cir. 1986) (error for district court to enter summary judgment where discovery is limited to non-moving party). Because of our resolution of the merits of the grant of summary judgment, we do not address the propriety of the case management order here.

summary judgment simply by presenting "conclusory allegations or denials; the existence of specific material evidentiary facts must be shown." *Liberty Lobby*, 477 U.S. at 256. Moreover, the *Liberty Lobby* court points out that

> there is no issue for trial unless there is sufficient evidence favoring the nonmoving party for a jury to return a verdict for that party. If the evidence is merely colorable or is not significantly probative summary judgment may be granted.

Id. at 249-50 (citations omitted). Consequently the court must ask whether, on the summary judgment record, reasonable jurors could find facts which demonstrated, by a preponderance of the evidence, that the nonmoving party is entitled to a verdict.

As noted above, the district court defined the *prima facie* case as consisting of four elements:

> 1) that defendants released PCBs into the environment; 2) that plaintiffs somehow ingested these PCBs into their bodies; 3) that plaintiffs have an injury; 4) that PCBs are the cause of that injury.

Dist. Ct. Op. at 38-39.[38] The first element (release of PCBs) was not disputed, but the district court found against the plaintiffs on the other three elements. We, however, believe that the evidence described in Part IIA, if admissible, creates a genuine issue of material fact on all three contested elements.

With regard to exposure, prong two of the district court's *prima facie* case, defendants assert that plaintiffs have not adduced sufficient evidence that they have been exposed to PCBs to a greater extent than anyone else. More specifically, defendants maintain that plaintiffs' exposure does not exceed the normal "background" level of PCB exposure in the United States. However,

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[38] The parties accept this formulation of Pennsylvania law.

whether plaintiffs have proffered sufficient evidence to show that their exposure level exceeds the normal background level depends on what that normal background level is. There is conflicting evidence on this point. Defendants' evidence suggests that PCB levels in the general United States population range up to 40 parts per billion (ppb) as measured in the bloodstream, while plaintiffs' evidence suggests that the level is "well below 3 ppb," and that a 5 ppb level falls within the 90th percentile in the United States. *See supra* notes 9 and 10. This conflict creates a genuine issue of material fact sufficient to withstand summary judgment on the exposure question because if a jury could reasonably believe plaintiffs' background level statistics, then there is ample evidence from which to conclude that the plaintiffs who lived adjacent to the railyard, had a higher PCB level than usual because of their exposure to defendants' PCBs.

There are also genuine issues of material fact with regard to the third element of the *prima facie* case, i.e., injury. Although most of the plaintiffs presented evidence of physical injury, defendants point out that several plaintiffs failed to allege or submit any evidence demonstrating physicial injury. This appears to be an accurate observation, but regardless of whether all plaintiffs alleged demonstrable physical injury, they all clearly alleged monetary injury. The medical monitoring claim is a claim for monetary damages. Plaintiffs are asking for money because, allegedly, their exposure to PCBs requires them to bear the costs associated with increased medical surveillance. This is an economic injury, which, according to the plaintiffs, is attributable to the defendants.

The court dismissed the medical monitoring claim as follows:

> Dr. Calesnick provides a two page affidavit which states that he has experience in treating persons exposed to PCB's, that he has performed physical

> examinations on some of the plaintiffs and concludes: "To a reasonable degree of medical certainty, these plaintiffs have been exposed to PCBs, there is a potential for them to sustain injuries from PCB exposure, if they have not already sustained these injuries, and there is a need for early detection and treatment of these PCB induced injuries for plaintiffs." This seems to be strikingly similar to the opinion offered in *Martin v. Johns Manville Corp.*[, 508 Pa. 154, 494 A.2d 1088 (1985),] and ruled inadmissible by the Pennsylvania Supreme Court. Because that was an asbestos case, and it has been epidemiologically proven that asbestos exposure can cause cancer, that doctor might have had more of a basis for his opinion.
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> * * *
>
> [Dr. Calesnick] is unwilling to say that any particular disease the plaintiffs have is caused by PCBs, just that they should be regularly checked because of the possibility of future harm. The plaintiffs call this a "medical monitoring claim." However, the claim is barred because the testimony of Dr. Calesnick and the other plaintiffs' experts who testify regarding the risk of future injury is insufficient to support it under Pennsylvania law.

Op. at 35, 40-41.

This language strongly suggests that the court, rather than measuring sufficiency of plaintiffs [*sic*] evidence regarding a medical monitoring claim, evaluated plaintiffs' evidence as if it were offered to prove an action for enhanced risk of future harm, and "barred" the action, following its interpretation [*sic*] *Martin*, as a matter of law. As we have explained, *supra* Part V, medical monitoring and enhanced risk claims are distinct causes of action. The question, on the medical monitoring claim, is whether the jury could reasonably believe Dr. Calesnick's assertion that there is a reasonable "need" for medical sur-

veillance. Because the district court appears to have applied the standards for enhanced risk claims in an action for medical monitoring, we find error, and we will therefore reverse the grant of summary judgment on this point.

On the fourth prong of the *prima facie* case, causation, defendants submit that plaintiffs have not offered any admissible toxicological or epidemiological evidence showing a correlation between PCBs and adverse health effects in humans. Appellants' Br. at 97. However, if we assume all proffered evidence is admissible, this is not so. Both Drs. Barsotti and Nicholson testified to a positive correlation between PCB exposure and human illness. **Drs. Barsotti, Nicholson, Zahalsky, Shubin and DiGregorio gave testimony, with reference to scientific studies, from which a jury could infer that there is a causal relationship between PCB exposure and the various illnesses contracted by plaintiffs. See DeLuca v. Merrell Dow Pharmaceuticals, Inc., No. 89-5572 (3d Cir. Aug. 17, 1990). The principles of DeLuca respecting statistical significance are also, of course, applicable to any studies relied on.** The defendants' experts offer evidence to the contrary, but that makes the issue suitable for a jury, not dismissible.

Defendants also argue that plaintiffs cannot possibly meet their burden on causation because no qualified expert submitted the differential diagnoses required to prove causation. Although defendants make this argument in terms of causation, we believe it is really an evidentiary contention and it is a contention that we have dealt with *supra* in Part VIC1. Admittedly, plaintiffs did not submit differential diagnoses performed by medical doctors, but they did submit differential diagnoses from non-medical doctors and we do not believe that the diagnoses are invalid simply because they were performed by non-physician experts.

As our discussion *supra* Part VIC1 makes clear, our Rule 702 expert qualification jurisprudence rejects rigid

formalism. The decision to qualify someone as an expert rests not on the specific academic degree held, but on the presence of sufficient knowledge, skill, experience, training or education. It would make little sense to exalt the opinion of a medical doctor with no experience in toxic exposure over the opinion of, for example, an eminently qualified toxicologist with a Ph.D. and years of experience and training. As Judge Pollak noted in denying a defendant's motion to exclude medical testimony by a non-medical doctor:

> [w]hile it is true that an expert must demonstrate special competence to present expert testimony there is no *per se* rule that non-physicians are unqualified to testify about the medical condition of individuals exposed to chemicals.

Villari v. Terminix International, Inc., 692 F.Supp. 568, 573 (E.D.Pa. 1988) (citation omitted). Therefore, we must consider the diagnoses of plaintiffs' experts. In light of that evidence, we are left with a genuine issue of material fact on the issue of causation.[39]

In sum, if we consider all of the evidence improperly excluded by the district court, plaintiffs have submitted sufficient evidence to survive summary judgment on each element of the *prima facie* case. A jury could believe plaintiffs' evidence regarding normal PCB background levels and from there could conclude that these plaintiffs were exposed to a larger than average dose of PCBs. Plaintiffs' evidence regarding the likelihood of latent di-

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[39] Our decision in *Vadino v. A. Valey Engineers*, 903 F.2d 253 (3d Cir. 1990), compels remand in the four instances in which the district court granted summary judgment on the separate ground that plaintiffs refused to comply or delayed in complying with discovery orders. This issue affects the cases of Cloyd Brown (No. 88-1980), William Reid (No. 88-1982), and Andre Walker and Bobby Burrell (Nos. 88-1989 and 89-1071). The district court's purely conclusory treatment of the issue leaves us without an effective basis for review, and we therefore reverse and remand for "an explanation of the legal basis for the district court's order." *Id.* at 259.

sease could lead a reasonable jury to conclude that plaintiffs needed to be monitored by medical experts. Finally, if the opinions of [*Drs. Barsotti and Nicholson's*] **plaintiffs' experts** are admissible, a jury could conclude that the defendants' PCBs caused plaintiffs' injuries. Hence, the grant of summary judgment must be reversed. **[Needless to say, we intimate no view as to whether a genuine issue of material fact would remain if, after further proceedings consistent with this opinion, the district court were to exclude enough of plaintiffs' expert's** [*sic*] **evidence on causation (or other critical issues) such that no genuine issue of material fact remained.] Needless to say, if, after further proceedings consistent with this opinion, the district court were to exclude enough of plaintiffs' expert's** [*sic*] **evidence on causation (or other critical issues) such that no genuine issue of material fact remained, it would be free to grant summary judgment for the defendants.**

VI. [*sic*] THE BUTLER PLAINTIFFS' MOTION TO AMEND

The seven Butler plaintiffs, having filed a complaint alleging both personal injury and property damage, later admitted, in response to defendants' discovery requests, that they do not currently suffer from any adverse health effects as a result of their exposure to PCBs. Defendants moved for summary judgment based on the Butler plaintiffs' failure to produce evidence in support of their personal injury claims. In their response to this motion, the Butler plaintiffs sought leave to amend their complaint to eliminate the personal injury claims, pursuant to Fed. R. Civ. P. 41. The theory of this motion was that although the Butlers were not then afflicted with injuries, the long latency periods often associated with toxic exposure could cause them to suffer injury in the future, thus making it advisable to preserve their personal injury claims until such time as any harm becomes manifest. Defendants, having already made significant in-

vestments in the instant litigation, opposed this motion, arguing that they would be prejudiced by the possibility of having to defend against these actions in the future. The court, without explanation, summarily denied plaintiffs' motion for leave to amend, and granted summary judgment in favor of defendants. A10141.

In *Howze v. Jones & Laughlin Steel Corp.*, 750 F.2d 1208 (3d Cir. 1984), addressing the propriety of a similarly unexplained denial of a motion to amend, we noted that

> [a]lthough the grant or denial of a motion to amend is within the sound discretion of the district court, *Lewis v. Curtis*, 671 F.2d 779, 783 (3d Cir.), *cert. denied*, 459 U.S. 880 . . . (1982), the general rule is that leave to amend "shall be freely given when justice so requires." Fed. R. Civ. P. 15(a).

Id. at 1212. Unable to find either a compelling reason for denial or any evidence of prejudice to the non-moving party in *Howze*, we concluded that the denial of the motion to amend was "not consistent with the sound exercise of discretion." *Id.* The *Howze* holding was rooted in the well established rule that amendments should be granted liberally. A similar liberal policy has been adopted in the voluntary dismissal context. Rule 41 motions "should be allowed unless defendant will suffer some prejudice other than the mere prospect of a second lawsuit." 5 J. Moore, *Moore's Federal Practice* ¶ 41.05[1], at 41-62 (1988).

Defendants will not be significantly prejudiced by granting plaintiffs' amendment. Although defendants have invested a good deal of time in this suit, the vast majority of their argument attacks the plaintiffs' theories of causation, exposure and non-physical injury. There is no indication that defendants invested significant amounts of time in the specific issue germane to the amendment, i.e., the Butler plaintiffs' physicial injuries, and that they will therefore be prejudiced if the Butler

plaintiffs eliminate their physical personal injury claims from their complaint. We therefore hold that the district court's denial of plaintiffs' motion for leave to amend was an abuse of discretion. Thus, we will reverse the district court's order denying plaintiffs' motion, and remand for further proceedings.

IX. SEPTA NOTICE

SEPTA moved separately for summary judgment against a number of plaintiffs based on those plaintiffs' failure to comply with the requirements of subsection (a)(1) of section 5522 of Pennsylvania's Judicial Code, 42 Pa.C.S.A. § 5522(a)(1).[40] That section provides, in relevant part, as follows:

> (a)(1) Within six months from the date that any injury was sustained or any cause of action accrued, any person who is about to commence any civil action or proceeding within this Commonwealth or elsewhere against a government unit for damages on account of any injury to his person or property under Chapter 85 . . . shall file in the office of the government unit, and if the action is against a Commonwealth agency for damages, then also file in the office of the Attorney General, a statement in writing . . . setting forth . . . [the particulars of the case] . . . .
>
> (2) If the statement provided for by this subsection is not filed, any civil action or proceeding commenced against the government unit more than six months

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[40] On appeal, SEPTA argues that the district court's grant of summary judgment in its favor in five such cases should be affirmed. These cases are: No. 88-1975 (Craig Brown), Nos. 88-1987 and 89-1074 (Ingram), No. 88-1977 (Johnson), Nos. 88-1988 and 89-1079 (Cunningham), and No. 88-1982 (Reid). In addition, SEPTA argues that summary judgment should have been granted in its favor in two additional cases where the issue was raised, but not addressed by the district court. These cases are: Nos. 88-1986 and 89-1075 (Knight) and Nos. 88-1991 and 89-1073 (Jones).

after the date of injury shall be dismissed and the person to whom any such cause of action accrued for any injury to person of [*sic*] property shall be forever barred from proceeding further thereon within this Commonwealth or elsewhere. *The court shall excuse failure to comply with this requirement upon a showing of reasonable exuse for failure to file such statement.*

(3) In the case of a civil action or proceeding against a government unit *other than the Commonwealth government:*

* * *

(iii) *Failure to comply with this subsection shall not be a bar if the government unit had actual or constructive notice of the incident or condition giving rise to the claim of a person.*

(Emphases added.) Plaintiffs, despite their noncompliance with this statute, argue that summary judgment in favor of SEPTA on this issue is improper because (1) SEPTA had actual or constructive notice of the conditions giving rise to plaintiffs' injuries, and (2) SEPTA suffered no prejudice from the failure to give notice.

Plaintiffs' first argument invokes the protection of subsection (a)(3)(iii), which by its terms extends only to actions against a government unit "other than the Commonwealth government." Thus, if SEPTA is part of the Commonwealth government, plaintiff's first argument must fail. The term "Commonwealth government" is defined as including, *inter alia*, "the departments, boards, commissions, authorities and officers and agencies of the Commonwealth." 42 Pa.C.S.A. § 102. In a recent decision, the Pennsylvania Supreme Court held, in the context of determining sovereign immunity, that the Port Authority of Allegheny County is an 'agency of the Commonwealth,' rather than one of the types of local agencies excluded from the definition of 'Commonwealth

government.'" *Marshall v. Port Authority of Allegheny County*, —— Pa. ——, ——, 568 A.2d 931, 933-34 (1990). The court based its decision on the express statutory language creating the Port Authority, which empowered the Authority to "exercis[e] the public powers of the Commonwealth as an agency thereof." 55 Pa. C.S.A. § 553(a).

SEPTA's authorizing statute includes a similar mandate that SEPTA "exercise the public powers of the Commonwealth as an agency and instrumentality thereof." 55 Pa. C.S.A. § 600.303(a). Consequently, we believe that the Pennsylvania Supreme Court would rule that SEPTA, as an agency of the Commonwealth, is part of the Commonwealth government as defined in 42 Pa. C.S.A. § 102. Therefore, the provisions of subsection (a)(3)(iii) cannot be applied to excuse the plaintiffs' failure to give actual notice to SEPTA.[41]

Plaintiffs second contention is that they should be excused from noncompliance under subsection (a)(2) because, although they were negligent in not realizing that SEPTA is a governmental unit for the purposes of the notice statute, SEPTA has not shown that it was prejudiced. SEPTA concedes that it has not shown prejudice, but argues that the statute does not require a showing of prejudice. The language of subsection (a)(2) itself makes no reference to a showing of prejudice, and notes only that the court "shall excuse noncompliance . . . upon a showing of reasonable excuse." However, a Pennsylvania Supreme Court case, interpreting a substantially similar predecessor to the notice statute, held that a "reasonable excuse" was established "[w]here the ignorance of a claimant or the negligence of his counsel is coupled with a determination that no undue hardship resulted to

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[41] This holding is consistent with the Pennsylvania Supreme Court's decision in *Feingold v. Southeastern Pennsylvania Transportation Authority*, 512 Pa. 567, 517 A.2d 1270 (1986), which held that SEPTA is an agency of the Commonwealth for liability purposes.

the municipality from the failure to file." *Yurechko v. County of Allegheny*, 430 Pa. 325, 331, 243 A.2d 372, 376-77 (1968).

Litigation under the current statute has yielded divergent results on this issue in the Commonwealth Court but no opinion by a higher court. In *Graffigna v. City of Philadelphia*, 98 Pa.Commw. 624, 512 A.2d 91 (1986), the court affirmed SEPTA's invocation of the notice statute, stating as follows:

> [T]he appellant argues that SEPTA failed to demonstrate that the appellant's noncompliance with the notice prerequisite prejudiced SEPTA. However, a government unit need not show that it was prejudiced by lack of timely notice. The statute imports no such requirement.

Id. at 630, 512 A.2d at 94. However, a later decision of the same court concluded that "the holding of the Supreme Court in *Yurechko* . . . control[s] a case where a plaintiff has failed to comply with the notice requirement established by subsection (a)(1). . ., and then contends that his noncompliance should be excused pursuant to subsection (a)(2). *Ramon v. Dept. of Transportation*, 124 Pa.Commw. 416, ——, 556 A.2d 919, 923 (1989), *aff'd without opinion*, —— Pa. ——, 573 A.2d 1025 (1990) (per curiam). The *Ramon* court distinguished *Graffigna* by limiting *Graffigna*'s holding that no prejudice need be shown to those situations in which "noncompliance should have been excused pursuant to . . . subsection (a)(3)(iii) (actual or constructive notice)" and not in situations where the "reasonable excuse" provisions of subsection (a)(2) are invoked. *Id.*

Although the Supreme Court's affirmance of the panel decision in *Ramon* took the form of a summary, *per curiam* order, it nonetheless contributes "a binding decision of precedential authority" under the law of Pennsylvania. *Commonwealth v. Gretz*, 520 Pa. 324, ——, 554

A.2d 19, 20 (1989). Therefore, we must reject SEPTA's attempt to have us apply *Grafigna* [*sic*] in this case because plaintiffs are invoking the "reasonable excuse" provisions of subsection (a)(2). In short, *Ramon* stands for the proposition that SEPTA must show prejudice in this context. Because SEPTA has not shown prejudice, the summary judgment on that ground must be set aside.

VII. CONCLUSION

For all of the foregoing reasons, the summary judgment will be reversed, and the case remanded to the district court for further proceedings consistent with this opinion.

A True Copy:
Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

APPENDIX B

Filed October 29, 1990

UNITED STATES COURT OF APPEALS FOR THE THIRD CIRCUIT

Nos. 88-1973/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92, 89-1070/71/72/73/74/75/76/77/78/79 and 89-1097

* * * *

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

* * * *

On Appeal From the United States District Court for the Eastern District of Pennsylvania (D.C. Civil Nos. 86-7414/15/16/17/18/19/20/21/22/87-5304, 86-2229, 87-1258, 87-1190, 87-0712, 86-7561, 87-5269, 86-2235, 86-2669, 86-5277, 87-3227, 87-2874

Argued September 8, 1989

Before: BECKER, MANSMANN and NYGAARD, *Circuit Judges*

* * * *

ORDER AMENDING OPINION

The slip opinion filed September 20, 1990 in the above-captioned case is amended as follows:

On page 25, line 5 [page 23a, line 9 herein], the words "failed to conduct" are substituted for "denied plaintiffs' requests for."

On page 68, line 23 [page 61a, line 24 herein], the words "failed to conduct" are substituted for "rejected plaintiffs' request for."

On page 86, first full paragraph, line 10 [page 77a, line 14 herein], the following sentences are inserted before the last sentence of that paragraph:

> Drs. Barsotti, Nicholson, Zahalsky, Shubin and DiGregorio gave testimony, with reference to scientific studies, from which a jury could infer that there is a causal relationship between PCB exposure and the various illnesses contracted by plaintiffs. *See Deluca v. Merrell Dow Pharmaceuticals, Inc.*, No. 89-5572, (3d Cir. Aug. 17, 1990). The principles of *DeLuca* respecting statistical significance are also, of course, applicable to any studies relied on.

The following sentence is inserted at the end of the carryover paragraph on pages 87 and 88 [page 79a, line 7 herein]:

> Needless to say, we intimate no view as to whether a genuine issue of material fact would remain if, after further proceedings consistent with this opinion, the district court were to exclude enough of plaintiffs' expert's evidence on causation (or other crictial issues) such that no genuine issue of material fact remained.

BY THE COURT,

/s/ *Edward R. Becker*
Circuit Judge

DATED: October 29, 1990

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

APPENDIX C

Filed November 23, 1990

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-1973/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92, 89-1070/71/72/73/74/75/76/77/78/79 and 89-1097

* * * *

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

* * * *

On Appeal From the United States District Court
for the Eastern District of Pennsylvania
(D.C. Civil Nos. 86-7414/15/16/17/18/19/20/21/22/87-5304, 86-2229, 87-1258, 87-1190, 87-0712, 86-7561, 87-5269, 86-2235, 86-2669, 86-5277, 87-3227, 87-2874

Argued September 8, 1989

Before: BECKER, MANSMANN and NYGAARD,
Circuit Judges

* * * *

ORDER AMENDING OPINION

The slip opinion filed September 20, 1990 in the above-captioned case and amended October 29, 1990 is again amended as follows:

1. On page 63 of the slip opinion [page 56a herein], the word "significantly" is inserted before "increased" in

the second line of the second numbered paragraph, so that the sentence will now read:

> 2. As a proximate result of exposure, plaintiff suffers a significantly increased risk of contracting a serious latent disease.

2. On page 64 of the slip opinion, line 5 [page 57a, line 20 herein], insert the following footnote (denominated 25a) after "Pennsylvania":

> In light of the statute of limitations problems caused by Pennsylvania law against splitting causes of action, we intimate no view as to whether a plaintiff who sues for medical monitoring must forego his or her claim for damages if and when the disease ultimately manifests itself.

3. On page 68, line 24 [page 61a, line 25 herein], the following footnote (denominated 29a) is inserted after the word "hearing":

> The plaintiffs did not request an *in limine* hearing and in fact opposed it on the grounds that it was premature, i.e., they did not want to be forced into it before their discovery was complete. We emphasize, however, that the management of complex litigation may not be relegated to the lawyers but at all times remains the responsibility of the court. *See* Manual for Complex Litigation 2d § 20.1

4. On page 88, lines 9 and 10 [page 79a, lines 2 and 3 herein], the words "plaintiffs' experts" is substituted for "Drs. Barsotti and Nicholson."

5. On pages 87 and 88, the sentence at the end of the carryover paragraph (added in the previous amendment to opinion filed October 29, 1990) [at page 79a herein], is amended to read as follows:

> Needless to say, if, after further proceedings consistent with this opinion, the district court were to

exclude enough of plaintiffs' expert's evidence on causation (or other critical issues) such that no genuine issue of material fact remained, it would be free to grant summary judgment for the defendants.

BY THE COURT,

/s/ Edward R. Becker
Circuit Judge

DATED: November 23, 1990

A True Copy:

Teste:

Clerk of the United States Court of Appeals
for the Third Circuit

APPENDIX D

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT
OF PENNSYLVANIA

Master File No. 86-2229

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

THIS DOCUMENT RELATES TO CIVIL ACTION NUMBERS:

86-2229 (MABEL BROWN v. SEPTA, *et al.*)
86-2235 (BURRELL v. SEPTA, *et al.*)
86-2669 (CUMMINS v. SEPTA, *et al.*)
86-4037 (COHEN & GARON v. SEPTA, *et al.*)
86-4723 (THOMPSON v. SEPTA, *et al.*)
86-5277 (JONES v. SEPTA, *et al.*)
86-5886 (LAMENT v. SEPTA, *et al.*)
86-7414 (CHRISTOPHER BROWN v. SEPTA, *et al.*)
86-7415 (CATHLENE BROWN v. SEPTA, *et al.*)
86-7416 (CRAIG BROWN v. SEPTA, *et al.*)
86-7417 (BARBETTA v. SEPTA, *et al.*)
86-7418 (JOHNSON v. SEPTA, *et al.*)
86-7419 (CELESTE BROWN v. SEPTA, *et al.*)
86-7420 (CLEMMON BROWN v. SEPTA, *et al.*)
86-7421 (CLOYD BROWN v. SEPTA, *et al.*)
86-7422 (CURTIS BROWN v. SEPTA, *et al.*)
86-7561 (INGRAM v. SEPTA, *et al.*)
87-0712 (KNIGHT v. SEPTA, *et al.*)
87-1190 (NARCISE v. SEPTA, *et al.*)
87-1258 (WILLIAMS v. SEPTA, *et al.*)
87-2874 (BUTLER v. SEPTA, *et al.*)
87-3227 (STANBACH v. SEPTA, *et al.*)
87-5269 (CUNNINGHAM v. SEPTA, *et al.*)
87-5304 (REID v. SEPTA, *et al.*)

MEMORANDUM

R. F. KELLY, J. November 28, 1988

This memorandum is written in disposition of three summary judgment motions filed by the defendants in these actions.

FACTS

Since the 1930s, the twenty-three acre Paoli railyard has been a regional maintenance facility for various rail companies. The railyard was owned and operated by the Pennsylvania Railroad and its successor, the Penn Central Transportation Company, until 1976. Defendant Amtrak has owned the site since 1976. Between 1976 and 1983, the facility was operated by defendant, Conrail, as part of the commuter rail service that it operated during this period. Since 1983 defendant SEPTA has operated the railyard.

Throughout this period, the various railroads stored, handled and disposed of PCBs (polychlorinated biphenyls) that were used as dielectric fluid in the transformers on railroad cars. Defendant City of Philadelphia owned some of these railroad cars. Defendant General Electric manufactured and supplied the electrical transformers that contained PCBs. Defendant Monsanto was the only company that produced PCBs for the American market.

SEPTA no longer uses PCB fluid in its railcar transformers. However, the long-term presence and leakage of PCBs at the site caused various levels of PCB contamination at the yard and in the surrounding neighborhoods. The Environmental Protection Agency has implemented temporary measures designed to prevent the migration of PCBs through soil and water into residential and commercial areas adjacent to the yard. At the present time, the area is the site of a Superfund effort pursuant to 42 U.S.C. §§ 9606 and 9607 designed to remove the PCB

contamination from the railyard and the surrounding neighborhood.

PROCEDURAL HISTORY

The plaintiffs in this action have all filed suit seeking "response costs" under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 U.S.C. § 9607(a), which brings this case within the federal question jurisdiction of this court. The plaintiffs in these cases with motions presently before the court have state law personal injury actions as pendent claims. Most of these plaintiffs are or were residents of the neighborhood surrounding the railyard. In three of the cases, workers at the yard or their estates are plaintiffs.

On July 28, 1987, the defendants in this action moved that the court issue a case management order. The defendants argued that all of the plaintiffs had failed to answer expert interrogatories or to provide any discovery to substantiate their claim that PCBs released by the defendants had caused them personal injury. The defendants argued that the discovery process should be held in abeyance until the plaintiffs demonstrated that they had injuries caused by defendants' release of PCBs. The plaintiffs answered that there should be no halt in the general discovery process and that information held by the defendants would be useful to them in proving that defendants caused them injury. On September 24, 1987, the court issued a case management order that allowed the plaintiffs a ninety (90) day period in which to engage in discovery efforts "directed to reveal the quantity and nature of the PCBs used at the Paoli railyard and the health effects on defendants' employees of exposure to PCBs," which information the plaintiffs had asserted would allow their experts to give an opinion as to causation. After that, the defendants were to have ninety (90) days in which to engage in discovery "directed to reveal whether the plaintiffs have suffered personal in-

jury and whether the injury is caused by exposure to PCBs caused by the defendants."

The case management order stated that "all summary judgment motions to be made by defendants are to be filed by April 21, 1988." Because of the plaintiffs' failure to supply all of the discovery by the deadline of the case management order and because the court granted the defendants' motion to allow the deposition of plaintiffs' expert witnesses, this date was extended to July 8, 1988. The purpose of the case management order was to allow the plaintiffs to discover all that they said they needed to know in order to establish causation, to allow the defendants to discover from plaintiffs' experts the basis of their conclusion that defendants' actions caused plaintiffs' injuries, and to allow the defendants to seek summary judgment on the basis that plaintiffs' evidence produced in discovery was insufficient as a matter of law to prove that defendants caused plaintiffs' injuries.

During the period of discovery under the case management order, the parties engaged in numerous disputes over discovery matters and some plaintiffs filed a motion to dismiss without prejudice.

Because which experts a plaintiff has depends on which attorney represents that person, it is convenient to divide the plaintiffs into groups according to who represents them.

In ten cases, plaintiffs are represented by Kohn, Savett, Klein and Graf, P.C. (Harold E. Kohn and Joseph C. Kohn) or Klehr, Harrison, Harvey, Branzburg, Ellers & Weir (Arnold E. Cohen and Charlotte Thomas). In nine of those cases, plaintiffs answered discovery with the reports of three experts:

> 1) Herbert Allen, Ph.D., a chemist, whose report stated that the area was highly contaminated by PCBs and that there was PCBs in the air and he calculated an amount of PCBs in the air.

2) Deborah Barsotti, Ph.D., a toxicologist, whose report stated general information about PCBs and then concluded that whatever injuries were claimed by plaintiffs to be caused by PCBs were caused by PCBs.

3) Arthur C. Zahalsky, Ph.D., an immunologist, who reported that PCBs caused immune system injuries in these plaintiffs.

In the case of *Cunningham v. SEPTA*, 87-5269, the expert report was by Harry Shubin, M.D. who reported that a number of diseases of the two persons involved in the case were caused by PCBs.

In the nine cases with D. Bruce Hanes as plaintiffs' attorney, G. John DiGregorio, M.D. reported that the plaintiffs have a fear of future harm and an increased risk of future harm. Dr. DiGregorio also stated that certain laboratory results, such as elevated triglycerides and cholesterol and such complaints as insomnia and irritability, were due to PCBs.

Other plaintiffs made no response to discovery under the case management order.

As contemplated by the case management order, a number of summary judgment motions and answers thereto were filed by the parties and these are listed below:

July 8, 1988	Defendants' Joint Motion for Summary Judgment on Causation
July 8, 1988	Defendants' Joint Motion for Summary Judgment for Failure to Produce Evidence and under the Bar of the Statute of Limitations
July 8, 1988	Motion of Defendant, Septa, for Summary Judgment (Arguing that Pennsylvania law requires notice to a state agency six months after a cause of action accrues.)

August 8, 1988	Answer of William Reid to Motion of SEPTA for Summary Judgment (Case NO. 87-5304 Lamb, Windle & McErlane, P.C., James C. Sargant, Attorney)
August 8, 1988	Response of Plaintiffs to the Defendants' Joint Motion for Summary Judgment and Motion of the Plaintiffs for Leave to Amend their Complaint (*Butler v. SEPTA*, 87-2874, Motion for Failure to Produce Evidence. Wisler, Pearlstine, Talone, Craig & Garrity, Geoffrey L. Beauchamp and Kittredge, Kaufman & Donley. Joseph M. Donley and Kenneth A. Roos, Attorneys.)
August 8, 1988	Plaintiffs' Response to Defendants' Joint Motion for Summary Judgment on Causation (*Butler v. SEPTA*, 87-2874)
August 18, 1988	Defendants' Joint Response to Motion of Plaintiffs for Leave to Amend their Complaint (*Butler v. SEPTA*, 87-2874)
August 22, 1988	Answer of William Reid to Defendants' Joint Motion for Summary Judgment for Failure to Produce Evidence and under the Bar of the Statute of Limitations (87-5304)
August 22, 1988	Plaintiffs' Memorandum in Opposition to Defendants' Joint Motion for Summary Judgment on Causation (Kohn, Savett, Klein & Graf and Klehr, Harrison, Harvey, Branzburg, Ellers and Weir)
August 22, 1988	Plaintiffs' Answer to Defendants' Joint Motion for Summary Judgment on Causation (D. Bruce Hanes)
August 22, 1988	Plaintiffs' Memorandum in Opposition to SEPTA's Motion for Summary Judgment (D. Bruce Hanes)

August 24, 1988	Plaintiffs' Answer to Defendants' Joint Motion for Summary Judgment for Failure to Produce Evidence and under the Bar of the Statute of Limitations (Kohn, Savett, Klein & Graf and Klehr, Harrison, Harvey, Branzburg, Ellers & Weir)
August 24, 1988	Plaintiffs' Answer to Motion for Summary Judgment of Defendant SEPTA (Kohn, Savett, Klein & Graf and Klehr, Harrison, Harvey, Branzburg, Ellers & Weir)
August 25, 1988	Defendant Monsanto Company's Memorandum in Reply to Plaintiff's Motion to Amend (*Butler v. SEPTA*, 87-2874)
September 2, 1988	SEPTA's Reply Memorandum in Support of its Motion for Summary Judgment
September 9, 1988	Plaintiffs' Surreply Memorandum in Opposition to SEPTA's Motion for Summary Judgment (Kohn, Savett-Klehr, Harrison)
September 15, 1988	Defendants' memorandum in reply to plaintiffs answering memorandum on causation filed (D. Bruce Hanes plaintiffs)
September 15, 1988	Defendants' reply memorandum in support of motion for summary judgment against Plaintiff William Reid (87-5304)
September 15, 1988	Defendants reply brief to plaintiffs' memorandum in opposition to defendants' joint motion for summary judgment on causation (Kohn, Savett-Klehr, Harrison plaintiffs)
September 15, 1988	Defendants' joint motion to strike portions of plaintiffs memorandum in opposition to defendants joint motion for summary judgment on causation (Kohn, Savett-Klehr, Harrison plaintiffs)

September 15, 1988	Defendants' reply to the residential plaintiffs opposition to summary judgment
September 23, 1988	Plaintiffs answer to defendants joint motion to strike portions of plaintiffs' memorandum in opposition to defendants' joint motion for summary judgment on causation (Kohn, Savett-Klehr, Harrison)
September 30, 1988	Plaintiffs' sur-reply brief to defendants' reply brief to plaintiffs' memorandum in opposition to defendants' joint motion for summary judgment on causation (Kohn, Savett-Klehr, Harrison)

STANDARD FOR GRANTING SUMMARY JUDGMENT

Rule 56 of the Federal Rules of Civil Procedure provides that summary judgment shall be entered in favor of a moving party where it appears "that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law." The standard for granting summary judgment "mirrors the standard for a directed verdict." *Anderson v. Liberty Lobby, Inc.*, 477 U.S. 242, 250 (1986); *Celotex Corp. v. Catrett*, 477 U.S. 317, 323 (1986).

In response to a motion for summary judgment, the non-moving party must make a sufficient showing to establish a genuine issue of fact on those elements with respect to which it has the burden of proof. *Celotex Corp.* at 323.

Of course, all justifiable inferences must be drawn in favor of the nonmovant, "[c]redibility determinations, the weighing of evidence, and the drawing of legitimate inferences from the facts are jury functions, not those of a judge, whether he is ruling on a motion for summary judgment or for a directed verdict." *Anderson v. Liberty Lobby* at 255.

Summary judgment is not precluded merely because a party has produced an expert to support its position. *Merit Motors, inc. v. Chrysler Corp.*, 565 F.2d 666, 673 (D.C. Cir. 1977); *Flegenhauer v. Texaco*, No. 85-3671 slip op. (E.D. Pa. Dec. 1, 1987) (Ditter, J.) An expert, who brings little more than his credentials and a subjective opinion, will not forestall entry of summary judgment in favor of the defendant. *Viterbo v. Dow Chemical Co.*, 826 F.2d 420, 424 (5th Cir. 1987); In re *Agent Orange Product Liability Litigation*, 611 F. Supp. 1223, 1258-59 (E.D.N.Y. 1985).

DISCUSSION

Defendants' motions seek summary judgment on a variety of grounds. SEPTA's motion asserts that Pennsylvania law requires prospective plaintiffs to give a state agency notice of their claim within six months of the cause of action accruing, that these plaintiffs have failed to do so, and that failure to give this notice precludes suit under Pennsylvania law. The defendants filed a motion for summary judgment for failure to produce evidence and under the bar of the statute of limitations. This motion demands judgment against those plaintiffs who failed to produce evidence that defendants' actions caused them injury, and it asserts that discovery produced by some of the plaintiffs indicates that they thought they had been injured by PCBs from the Paoli railyard for as long as six years before they filed suit. The most complex motion is the motion of defendants asserting that no plaintiffs have offered sufficient evidence to prove that defendants caused them injury.

The defendants first address the claims of the plaintiffs who claim they were exposed to PCBs by the defendants because they lived near the railyard—the residential plaintiffs. The defendants assert that the plaintiffs' experts, who had given opinions, did not and could not reasonably dispute the Paoli Exposure Study of the Agency

for Toxic Substances and Disease Registry (the ATSDR Study). The ATSDR is charged by law, 42 U.S.C. § 9604(i), with conducting health assessments of waste sites on the National Priorities List. If the health assessment indicates "a significant increased risk of adverse health effects in humans," the Administration is directed to initiate a health surveillance program for the exposed population.

The ATSDR Study considered the people of the neighborhood according to three variables. The first was where, in the neighborhood, they lived. The neighborhood was divided into three areas according to the topological potential for soil exposure to PCBs from the railyard. The study found that those residents who lived in an area that had more PCBs in the soil did not have any more PCBs in their blood than the other areas.

The second variable was whether PCBs in the blood increased as a function of the number of years spent living in the vicinity of the railyard. The study found no connection.

The third variable studied was whether there was any relation between the amount of PCBs found in a resident's soil and the amount found in his or her blood. In order to make this determination, the study divided the residents of the railyard area into two groups. The first group was a randomly selected group from the neighborhood. The study termed this group the probability selected group. The second group was a group with the highest yard soil concentrations in the neighborhood. The study termed this group the pre-selected group. The study found that the residents with higher PCB levels in their yards did not have significantly higher PCB levels than those that had less.

The study also concluded that the residents' PCB level did not differ significantly from the PCB level borne by the general population. The study stated that the geo-

metric mean serum PCB concentration of populations having no known unusual source of PCB exposure range between 4.2 ppb (parts per billion) and 6.4 ppb. The geometric mean serum PCB concentration, in the probability selected group, as 4.3 ppb and in the preselected group, it was 5.3 ppb. Ninety-seven percent of the probability selected group had serum PCB concentrations of less than 20 ppb compared with 95 percent of the preselected group and 95 percent of the general United States population. The defendants state that all other studies done in the United States of populations living near PCB source sites have produced similar results. The defendants contend that this means that no expert can assert, in accordance with generally accepted scientific standards, that the residential plaintiffs have taken into their bodies PCBs originating at the Paoli railyard.

The defendants further argue that the claims of all the plaintiffs, residential and occupational, are contrary to generally accepted scientific and medical opinion regarding PCBs.

The defendants cite the *Toxicological Profile for Selected PCBs* (draft) (Nov. 1987) prepared by the ATSDR. The *Toxicological Profile*'s Forward [*sic*] states:

> This profile reflects our assessment of all relevant toxicological testing and information that has been peer reviewed. It has been reviewed by scientists from ATSDR, EPA, the Centers for Disease Control, and the National Toxicology Program. It has also been reviewed by a panel of nongovernment peer reviewers and was made available for public review. Final responsibility for the contents and views expressed in this toxicological profile resides with ATSDR.

The Toxicological Profile concluded:

> Occasional skin irritations, usually acnelike lesions and rashes, and liver effects are the only significant

> adverse health effects that have been observed in PCB-exposed workers. Workers experience PCB exposures that are much higher than those received by the general public. Adverse health effects have not been observed in people in the United States with nonoccupational exposure.

Toxicological Profile, § 1.4 at p.2. In regard to the liver effects noted among PCB workers, the *Profile* states they "are inconsistent and not clearly associated with clinically detectable liver disease." The inconsistency may be due to the "fact that many of the studies . . . did not account for confounding variables." § 4.3.2.1.

In *Human Health Effects of PCBs and PPBs*, 24 American Review of Pharmacology and Toxicology 87 (1987), Dr. Renata Kimbrough of the Center for Disease Control stated:

> In conclusion, various toxic effects of PBBs and PCBs have been described in laboratory animals. In humans, acute poisoning outbreaks have only occurred following exposure to a combination of PCBs and PCDFs. When humans were exposed only to PCBs or PBBs, the only observed acute effects have generally been minor. So far, no significant chronic health effects have been causally associated with exposure to PCBs or PBBs.

Id. at 106.

The defendants assembled a panel of medical doctors and scientists[1] with impressive credentials who filed a joint affidavit which states in part:

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[1] Harris Busch, M.D., Ph.D., director of the Cancer Research Program, Chairman of the Department of Pharmacology, and Professor of Medicine at Baylor College of Medicine, M.D. from the University of Illinois, Ph.D. from the University of Wisconsin in Biochemistry; Peter A. Cassileth, M.D., attending physician at the Hospital of the University of Pennsylvania, associate director of the University of Pennsylvania Cancer Center, Professor of Medi-

We have reviewed the extensive literature on PCBs and have found that no reasonable medical or scien-

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cine, Department of Medicine, University of Pennsylvania, M.D. from Columbia University; Jordan N. Fink, M.D., Professor of Medicine and Chief of the Allergy-Immunology Section of the Medical College of Wisconsin at Milwaukee, fellow and past president of the American Academy of Allergy and Immunology, M.D. from the University of Wisconsin Medical School; S. Alf Fischbein, M.D., Associate Professor, Division of Environmental and Occupational Medicine at the City University of New York, M.D. from the University of Land, Sweden; Gio Batta Gori, Director of the Health Policy Center, doctorate in biological sciences, University of Camerina, Italy and a Master of Public Health degree from Johns Hopkins University; Raymond D. Harbison, Ph.D., director of Interdisciplinary Toxicology at the Center for Environmental Toxicology, and Professor of Pharmacology in the School of Medicine at the University of Florida, Ph.D. in Pharmacology/Toxicology from the University of Iowa; Rudolf John Jaeger, Ph.D., Principal Scientist and President of Environmental Medicine, Inc. a clinical consulting practice in toxicology, research professor of Environmental Medicine at the New York University Medical Center Institute of Environmental Medicine and Visiting Lecturer on Occupational and Environmental Toxicology in the Department of Environmental Health Sciences and Physiology at the Harvard University School of Public Health, Ph.D. in biochemical toxicology from Johns Hopkins University School of Hygiene and Public Health; Jack S. Mandel, Ph.D., M.P.H., Associate Professor in the Division of Environmental Health at the School of Public Health, University of Minnesota and Instructor at the Midwest Occupational Health Institute at the University of Minnesota, M.P.H. in epidemiology from the University of Minnesota and Ph.D. in epidemiology from the University of Minnesota; Robert Wilson Morgan, M.D., S.M.Hyg., President and Senior Physician Epidemiologist at Environmental health Associates, M.D. from the University of British Columbia and S.M. Hyg. in epidemiology from the Harvard University School of Public Health; Stanley M. Pier, Ph.D., Associate Professor of Occupational Health and Aerospace Medicine at the University of Texas Health Science Center at Houston, School of Public Health, Ph.D. in Organic Chemistry, Theoretical Physics and Inorganic Chemistry from Purdue University; William Joseph Waddell, M.D., Professor and Chairman of the Department of Pharmacology and Toxicology at the University of Louisville, M.D. from the University of North Carolina; Robert H. Waldman, M.D., Dean of the Department of Medicine, University of Nebraska, M.D. from the Washington University Medical School.

> tific basis exists for concluding that chronic exposure to PCBs cause cancer, hypertension, cardiovascular diseases, elevations in serum triglycerides or cholesterol levels, liver disease, joint irritation, pancytopenia, post-operative humans.

Defendants contend that nothing in the scientific literature, as generally accepted by the standards of the scientific community, contradicts any of these conclusions, so the plaintiffs are out of court.

The defendants mean to exclude, by the phrase "generally accepted by the scientific community," studies in two categories: (1) animal studies and (2) studies resulting from the Yusho and Yu Cheng incidents.

Rule 703 of the Federal Rules of Evidence controls the issue of what an expert is allowed to use as a basis for testimony. This Rule states:

> The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

This Rule was interpreted by the Third Circuit Court of Appeals in the case *In re Japanese Electronic Products Antitrust Litigation*, 723 F.2d 238 (3d Cir. 1983). Factually, that case was very different from this litigation, however, it is the leading case in the Third Circuit on the issue of what constitutes a sufficient basis for an expert opinion. The court held: "The proper inquiry is not what the court deems reliable, but what experts in the relevant discipline deem it to be." *Id.* at 276. The trial court had excluded expert opinions of economists because they were based on data that were found to be inadmissible and unreliable. The Court of Appeals stated: "There are in the record unequivocal and uncontradicted

affidavits from each of the experts that the data they relied on in forming their opinions were of a type reasonably relied upon by experts in their respective fields." *Id.* However, that is not the situation in the case now before the court. In this case, the defense experts unequivocally contradict the proposition that the results of animal studies can ever be the basis of a finding that a disease of a particular human being is more likely than not caused by a particular chemical. The defendants argue that animal studies are an appropriate method for regulatory agencies to determine whether or not there is any risk that a particular chemical might be a threat to public health but they are totally irrelevant in a tort case where the question is whether it is more likely than not that defendant caused plaintiff's injury.

There are federal court cases on both sides of the question whether an expert should be permitted to testify as to the cause of human illness based upon the results of animal tests. The case of *In re "Agent Orange" Products Liability Litigation*, 611 F.Supp. 1221 (E.D. N.Y. 1985) is factually similar to this case because it involved experts willing to testify to the harmful effect of a chemical in the face of epidemiological studies that fail to show that harmful effect. In that case, Chief Judge Weinstein held that: "The animal studies are not helpful in the instant case because they involve different biological species. They are of so little probative force and are so potentially misleading as to be inadmissible. *See* Fed. R. Ev. 401-403. They cannot be an acceptable predicate for an opinion under Rule 703."

In the recent case of *Richardson v. Richardson-Merrell, Inc.*, 87-203 and 87-7024 (D.C. Cir. September 27, 1988) the circuit court affirmed the granting of judgment n.o.v. to the defendant drug company where the plaintiffs alleged that the drug Bendectin caused the minor plaintiff's birth defects. The court held that a jury verdict could not be reasonably based on the opin-

ion of a medical doctor and former professor of pediatrics, pharmacology and toxicology who stated that the birth defects were caused by Bendectin and that his opinion was in turn based upon study of chemical structure, *in vitro* studies of the effect of Bendectin on animal tissues, and studies showing Bendectin caused birth defects in animals, even though he was an expert and stated that the epidemiological studies were "defective, inconclusive or both." This is very similar to what plaintiff's experts say about the PCB epidemiological studies. Both the District Court and Court of Appeals found conclusive the testimony of the defense expert that the epidemiological evidence showed Bendectin did not cause birth effects. The District Court found there was a scientific consensus that Bendectin has not been shown to cause birth defects, and stated:

> That Dr. Done remains an unbeliever and was willing to testify to his disbelief "with reasonable medical certainty" does not mandate that this case be left as the jury decided it. Without a genuine basis "in or out of the record," even his expert "theoretical speculations" are insufficient to sustain the plaintiff's burden of proving, by a preponderance of the evidence, that Bendectin not only causes congenital defects generally, but that, in particular, it caused those limb reduction defects with which Carita Richardson was most unfortunately born.

649 F. Supp. at 803, quoted by the Court of Appeals, slip op. at 8-9. The court thus found that plaintiff's experts' disagreement with the epidemiological studies was not a sufficient basis for a verdict. There are a number of other cases that come to a similar conclusion regarding the admissibility of expert testimony based on animal studies, for example, *Viterbo v. Dow Chemical Co.*, 826 F.2d 420 (5th Cir. 1987) and *Lynch v. Merrel-National Laboratories*, 646 F. Supp. 856 (D. Mass. 1986).

To be sure, there are cases on the other side of this issue: *Ferebee v. Chevron Chemical Co.*, 736 F.2d 1529 (D.C. Cir.), *cert. denied* 469 U.S. 1062 (1984); *Wells v. Ortho Pharmaceutical Corp.*, 788 F.2d 741 (11th Cir. 1982); *Villari v. Terminix International, Inc.*, 85-1363, 663 F. Supp. 727 (E.D. Pa. 1987) and slip. op. (August 9, 1988); *Ramirez v. Richardson-Merrell, Inc.*, 85-1504 (E.D. Pa. September 4, 1986); *Lanzilotti v. Merrell Dow Pharmaceuticals, Inc.*, 82-0183 (E.D. Pa. July 10, 1986).

The first question is whether the court is permitted to look behind the experts' statements that animal studies are the sort of data on which they would rely in determining what causes a disease in the practice of their profession, or whether the court is bound by the assertions of plaintiffs' experts. If Rule 703 is to be any limit on the ability of expert witnesses to give their opinions, a court must be permitted to examine the bases of the proffered opinions. Otherwise any case in which an expert was willing to use two sets of magic words would always survive motions for summary judgment and directed verdict. As long as the expert was willing to say "to a reasonable degree of scientific certainty" and "the basis of my opinion is X, on which experts in my field reasonably rely," every case requiring expert testimony would get to the jury. If a court is not permitted to examine the basis of an expert's opinion in order to rule on the admissibility of that opinion, then Rule 703 should read: "An expert may cite as the basis of his opinion anything he likes."

The next question is whether animal studies are a proper basis for the diagnosis of the cause of a disease. This case is not like the *Japanese Electronic Products* case in which plaintiffs' experts said their data was reliable without contradiction; here we have very convincing evidence on the record that says that these studies are irrelevant. Therefore, relying on the reasoning of the *Agent Orange* and *Richardson v. Richardson-Merrell,*

Inc., I find that the expert opinions based on animal studies are inadmissible.

The next question is whether expert opinions based on studies of the Yusho and Yu Cheng incidents should be admitted. The Yusho and Yu Cheng incidents occurred in Japan and Taiwan in the late 1960s. In each of these incidents, rice oil was contaminated with a Japanese brand of PCBs. The people who ate food cooked with this rice oil got various diseases. Defendants argue that it is bad science, and therefore inadmissible evidence, to base conclusions regarding the health of our plaintiffs on what happened to those people. It does seem clear that the consensus conclusion from the scientific literature is that the diseases that occurred in the victims of these incidents were caused by the ingestion of highly toxic PCDFs with their food and is not evidence of the effects of PCBs. Therefore, for the same reasons as addressed above regarding animal studies, I will exclude from evidence any expert opinion based on studies of the Yusho or Yu Cheng incidents.

Defendants next argue that the rules of evidence preclude the admission of the testimony of plaintiffs' experts.

First, defendants argue that Rule 703 precludes admission of the testimony. Rule 703 allows the admission of expert testimony if it is "helpful" to the factfinder.

Defendants cite the case of *Viterbo v. Dow Chemical Co.*, 646 F. Supp. 1420 (E.D. Tex. 1986) *aff'd* 826 F.2d 420 (5th Cir. 1987). In that case, the plaintiff claimed that a certain chemical caused him injury. In answer to a motion for summary judgment, an osteopath testified that the chemical did indeed cause plaintiff's injuries. The trial court excluded the testimony and granted summary judgment for the defendant. In justifying its examination of whether the scientific evidence he claimed to be relying on actually supported the expert's opinion, the court stated:

> A vigorous examination is especially important in the toxic tort context, where presentation to the trier of theories of causation depends almost entirely upon expert testimony. This examination is required because courts have afforded experts wide latitude in picking and choosing the sources from which to base opinions. Rule 703 nonetheless requires court to examine the reliability of those sources.
>
> If the underlying data is so lacking in probative force and reliability that no reasonable expert could base an opinion on that data, then an opinion that rests entirely upon that data must be excluded.

646 F. Supp. at 1424 (citations omitted).

In affirming, the Court of Appeals stated:

> "This opinion [from plaintiff's osteopath] simply lacks the foundation and reliability necessary to support expert testimony. As an unsupported opinion, it does not serve the purposes for which it is offered, that is, objectively to assist the jury in arriving at its verdict. . . . Indeed [the osteopath's] testimony is no more than Viterbo's testimony dressed up and sanctified as the opinion of an expert. Without more than credentials and a subjective opinion, an expert's testimony that "it is so" is not admissible. The district court properly excluded and granted summary judgment for Dow.

826 F.2d at 424.

Consideration of the statement of the Seventh Circuit, "there is not much difficulty in finding a medical expert witness to testify to virtually any theory of medical causation short of fantastic," *Stoleson v. United States*, 708 F.2d 1212, 1222 (7th Cir. 1983), leads to the conclusion that this view of Rule 703 has much to recommend it.

Epidemiological studies are studies of large numbers of humans exposed to some chemical in order to deter-

mine if they are more likely to get a particular disease or diseases than people not so exposed. The defendants contend that no peer-reviewed epidemiological study shows anything more than chloracne or liver effects for any human population and no health effects at all except for people heavily exposed at work. The plaintiffs' experts ignore human epidemiological studies, the findings of government and other general evaluations of the dangers of PCBs and the ATSDR Study and epidemiological studies of Paoli workers. The defendants contend that to admit such testimony is to admit testimony that is "unhelpful" because it is unreliable.

Defendants also argue that the testimony should be excluded under authority of Rule 403 which states: "Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence." The defendants point out that the only reason a jury would have for believing the plaintiffs' experts is that they have impressive academic degrees, will use long words in their testimony and will speak in a believable manner, because there is very little scientific support for their views.

Even if I found that plaintiffs' experts testimony reached the level of being probative, I would rule to exclude it on the basis of Rule 703 and 403 as "unhelpful" and more prejudicial than probative. *See, In re "Agent Orange"*, 611 F. Supp. at 1256.

We shall consider plaintiffs' experts using the standards set forth above.

The "medical" experts for the Klehr, Harrison and Kohn, Savett clients are Deborah Barsotti, Ph.D. and Arthur C. Zahalsky, Ph.D. Deborah Barsotti is a toxicologist who works for the ATSDR in Georgia. She

states that to "a reasonable scientific certainty" many disparate diseases that plaintiffs, in nine of these cases, have are caused by PCBs. Often she has no support from scientific literature to point to in regard to a specific disease. She finds PCBs caused hypertension and asthma even in people who have family histories of hypertension and asthma. She finds that PCBs caused the plaintiffs emotional distress, despite the fact that her area of expertise has nothing to do with emotional diseases and she has only talked to one of the plaintiffs. She claims that, by studying the plaintiffs medical histories, she has excluded other causes of these diseases, but she is not a medical doctor and is not trained in differential diagnosis.

Dr. Barsotti also claims that she has "traced" the PCBs in the plaintiffs bodies to the Paoli railyard by examining them chemically. Because Dr. Barsotti is not a chemist, I find this conclusion beyond the scope of her expertise and rule that it is inadmissible.

Arthur C. Zahalsky teaches nursing undergraduates at a college in Illinois and owns a immunological consulting firm called Immunox, Inc. His answer to the question of whether he is functionally interchangeable with Immunox is, "If you wish." Zahalsky has no graduate course credits in immunology, but bills himself as an immunologist. He says that he knows that PCBs cause damage to the immune system and that tests on these plaintiffs would prove it, but that these tests have not been done. He says that the diseases that the plaintiffs have are caused by damage to their immune system, but he is not trained in differential diagnosis.

G. John DiGregorio, M.D. is the expert in the D. Bruce Hanes cases. His plaintiffs are mostly healthy but he does diagnose a couple of diseases as probably caused by PCB exposure. He does not attempt to provide a differential diagnosis, however. Most of Dr. DiGregorio's opinion is that PCBs have caused his plaintiffs anxiety, fear

of future harm and a possibility of future harm. Defendants assert that Dr. DiGregorio's deposition shows the basis of his opinion to be his personal opinion and feeling that PCBs are dangerous, and he admits that the epidemiological evidence is against him.

Harry C. Shubin, M.D., is the plaintiffs' expert in the *Cunningham* case. He examined the two plaintiffs in this case in 1986. He gives his opinion that diseases in both plaintiffs were caused by PCBs but he has no scientific or medical support for these conclusions. He has not reviewed the ATSDR study, the ATSDR Toxicological Profile on PCBs or any epidemiological study.

Defendants also attack the report of Herbert Allen, Ph.D., a chemist who calculated an amount of PCBs in the air in the area of the railyard based on the amount of PCBs in the soil. Defendants cite affidavits of their own experts that such a calculation is not scientifically reliable, that any finding regarding how much PCBs are in the air must be based on actual measurements, and that the actual measurements that were taken showed an amount much lower than plaintiffs' expert calculated.

Defendant's final point is that those plaintiffs who do not point to some present disease cannot recover under any circumstances under Pennsylvania law.

In the case of *Martin v. Johns-Manville Corp.*, 508 Pa. 154, 494 A.2d 1088 (1985) the Pennsylvania Supreme Court considered the issue of whether a doctor should be permitted to testify that a plaintiff exposed to asbestos and suffering from asbestos related disease might have an undiscovered cancer caused by asbestos at the time of trial and certainly faced an increased risk of developing cancer. The tesitmony proffered in this case to prove risk of future harm is no stronger, and is in fact strikingly similar, to the testimony rejected by the Pennsylvania Supreme Court. 508 Pa. 164-65, 494 A.2d 1093-94.

In *Berardi v. Johns-Manville Corp.*, 334 Pa. Super. 36, 44-45, 482 A.2d 1067, 1072 (1984) the plaintiff was a woman who feared the future health effects of her asbestos exposure. Her husband worked with asbestos and, it was claimed, undoubtedly brought asbestos fibers home with him on his clothes which she was exposed to while laundering them. She had no physical symptoms but it was alleged that she "is waiting for an inevitable process to occur to render her injuries noticeable on an x-ray." The court held that, without any evidence of present injury, she was without a cause of action. The Superior Court in *Cathcart v. Keene Industrial Insulation*, 324 Pa. Super. 123, 151-53, 471 A.2d 493, 508 (1984) considered and rejected a similar claim.

In *Houston v. Texaco, Inc.*, —— Pa. Super. ——, ——, 538 A.2d 502, 504 (1988) the Superior Court held that plaintiffs could not recover for emotional distress absent some physical injury. In that case, gasoline from storage tanks leaked into the plaintiffs' well. Plaintiffs alleged that this caused them emotional distress, and the Superior Court held that they were without a cause of action.

Plaintiffs' attorneys have filed a number of answers to this motion for their respective clients. Most important is the answer filed for the Kohn, Savett and Klehr, Harrison plaintiffs, a 137 page brief supported by two volumes of appendices. Its most striking feature is reference to affidavits of four experts who had never been heard from in this litigation prior to the filing of this answer.

The defendants have filed a joint motion to strike this part of the plaintiffs' response on the ground that adding the testimony of additional experts at this point in the litigation is a violation of the case management order. The clear purpose of the case management order was to allow the defendants to discover what the plaintiffs' experts' opinions were before they filed their sum-

mary judgment motions. Authority exists for refusing to consider these untimely affidavits. *In re "Agent Orange"*, 611 F. Supp. at 1243. However, I will consider these late affidavits because of the policy of the Federal Rules of Civil Procedure that cases should be decided on the merits where possible.

Ian C. T. Nesbit received his Ph.D. degree from Cambridge University in physics in 1958 and is a "professional environmental scientist." Dr. Nesbit does not seem to have formally studied anything thereafter but has published and worked in "environmental science" since the early 1970s.

Dr. Nesbit gives conclusions in a number of areas. First, he says that the ATSDR Study's finding, that the neighbors of the Paoli railyard had the same "background" amount of PCBs in their bodies as the general population, is seriously mistaken because the ATSDR had the wrong figures for what the background exposure is. Dr. Nesbit claims that the only systematic survey of levels of PCBs in the general population in the United States was the National Human Adipose Tissue Survey (NHATS) conducted by the Environmental Protection Agency from 1970 to 1983. Adipose tissue is fat tissue where PCBs tend to accumulate in the body. Dr. Nesbit claims that it is possible to calculate how much PCB is in the fat from how much is in the blood. Most plaintiffs have had PCB blood tests, only a few have had PCB adipose tissue tests. The ATSDR report relied on blood tests not adipose tissue tests. Dr. Nesbit says that if you take the blood test results of the plaintiffs and the people in the ATSDR and you use his formula to calculate what their adipose tissue PCB content is, you will get a result that is much higher than the general background found in the EPA adipose tissue study.

Dr. Nesbit also states that the authorities cited by the defendants are wrong when they say that PCBs have

not been shown to be dangerous. He states that there is some evidence in the human studies of bad health effects from PCBs. He also vigorously defends the use of animal studies. He says, "a balanced assessment of the effects of a chemical, such as PCBs, would include weighing the results of less-than-conclusive human studies with those of more rigorously-controlled animal studies." Affidavit at 24.

Dr. Nesbit also attacks the ATSDR Study in more general terms.

These plaintiffs also produce the affidavit of Robert K. Simon, Ph.D., an industrial hygienist, toxicologist and forensic analytical chemist. Dr. Simon says that scientific techniques would allow a chemist to test the PCBs in a person and decide whether they came from the environment in general or from a specific source. Dr. Simon also attacks the ATSDR Study.

The plaintiffs summarize the attacks of Dr. Nesbit and Dr. Simon on the ATSDR Study as follows:

1. The conclusion that the Paoli Residents (non-plaintiffs) show exposures typical to the general U.S. population is flawed in that it incorrectly cites the background level as up to 20 ppb. The average level of PCBs in blood is now well below 3 ppb and 5 ppb represents the 95 percentile. The report fails to take account of the recent evidence.

2. ATSDR did not attempt to measure exposure in any way, such as through PCB levels in the soil of residences of the study population. Nor did it attempt to correlate blood levels of PCBs with soil levels of the selected subgroup of 34 individuals with putatively high exposure.

3. ATSDR did not include questions in their occupational/residential questionnaire about contact with the soil or other factors leading to exposure.

4. ATSDR did not focus on children, although children are generally considered to be at greatest risk of injury from exposure to PCBs.

5. ATSDR did not establish a "control" group or population comparable to the study group with the exception of residents near a highly contaminated PCB site.

6. The main comparison by ATSDR was of two groups: a "probability group" and a "preselected group." No attempt was made to correlate PCB levels of the soil with PCB levels of the probability group. Thus, the degree of difference in potential exposure is mere conjecture.

7. ATSDR excluded from the probability group individuals also in the preselected group. Thus the probability group was no longer a random sample.

8. ATSDR negated a result of near statistical significance of PCB levels by excluding from the preselected group one individual with high PCB levels.

9. When correcting the miscited background PCB levels of the general population, the Paoli residents' "geometric mean is 50 times greater than background. The individuals tested with levels greater than 20 ppb and e.g. 77 ppb are evidence of serious exposure." Affidavit of Simon at 6.

Dr. Simon does not give a basis for his statement that the background PCB blood burden can be calculated from the NHATS. Drs. Simon and Nesbit evidently believe that their blood to adipose tissue formula is over the number of studies that defendants' cite that indicate a PCB blood background amount directly by measuring it. However, the only reason they give for not believing them is that the NHATS is more recent. However, the NHATS ended in 1983 and some of the defendants' studies are more recent than that. Neither doctor cites any study that measured PCBs in the blood directly or cites

a basis for calculating blood burden from adipose tissue burden. Further, there are some plaintiffs in our case who have had both blood tests and adipose tissue tests and they do not reflect the 220 to 250 times relationship that these experts claim. I feel compelled to note further that I see nothing in Dr. Nesbit's curriculum vita that would qualify him to testify as an expert in this area.

I hold that plaintiffs have failed to show that they have been more heavily exposed to PCBs than the general population and therefore there is no basis for concluding that the source of their PCB body burden is the Paoli Railyard.

I do not find that their complaints regarding the ATSDR study lead to the conclusion that any of the plaintiffs have been exposed to PCBs from the railyard, or that the conclusions of the ATSDR study are incorrect.

Plaintiffs also present the affidavit of William J. Nicholson, Ph.D. who is Professor of Community Medicine in the Division of Environmental and Occupational Medicine of Mount Sinai, New York, New York. Dr. Nicholson received a Ph.D. in physics with a minor in physiology and biophysics. Among the things he has done at Mt. Sinai is directing industrial hygiene studies and conducting epidemiological studies.

Dr. Nicholson states that in December 1987, he wrote a study for the Ontario Ministry of Labor that was published and widely distributed. Dr. Nicholson states that this article was a study of the data of all the PCB worker epidemiological studies that had been published. Dr. Nicholson came to the conclusion that there was "substantial evidence for a causal association between excess risk of death from cancer of the liver, biliary tract, and gall bladder and exposure to PCBs."

Dr. Nicholson's study is what is called a "meta-analysis." Defense experts state that "meta-analysis" is a novel scientific technique in which data from a number of different epidemiological studies are put together and

then analyzed again to see if any positive results are obtained. Dr. Nicholson assembled the data from all of the epidemiological studies of PCBs, none of which independently showed any connection between PCBs and cancer and came to his conclusions.

In this circuit, the admissibility of expert testimony based on novel scientific techniques is controlled by the case of *United States v. Downing*, 753 F.2d 1224 (1985). In that case the court stated:

> In our view, Rule 702 requires that a district court ruling upon the admission of (novel) scientific evidence, i.e., evidence whose scientific fundaments are not suitable candidates for judicial notice, conduct a preliminary inquiry focusing on (1) the soundness and reliability of the process or technique used in generating the evidence, (2) the possibility that admitting the evidence would overwhelm, confuse, or mislead the jury, and (3) the proffered connection between the scientific research or test result to be presented, and particular disputed factual issues in the case.

Id. at 12137 [*sic*]. In my view all three of these factors militate against admitting this testimony. The reports of defendants' experts advance convincing reasons why meta-analysis as a technique, and this meta-analysis in particular, is not reliable. Dr. Nicholson's report has not been peer-reviewed or accepted by anybody in particular, even the Ontario Ministry of Labor. There is a possibility that Dr. Nicholson's testimony would confuse the jury because of its scientific nature and his credentials so they would make more of it than it actually deserved.

The third factor is the most influential in this determination. The conclusion of Dr. Nicholson's report is that there was "substantial evidence for a causal association between excess risk of death from cancer of the liver, biliary tract and gall bladder and exposure to PCBs."

None of our plaintiffs have cancer of the liver, biliary tract or gall bladder. Dr. Nicholson's report could not be the basis for anyone to say with reasonable degree of scientific certainty that some particular person's disease, not cancer of the liver, biliary tract or gall bladder, was caused by PCBs.

In fact, even if Dr. Nicholson's testimony was admissible despite being a novel scientific technique, it would be difficult to understand how it was relevant.

Dr. Nicholson states that his article was overlooked by the defendants' panel of experts. The plaintiffs argue that this is evidence of a lack of credibility on their part. Defendants reply that their experts claimed to have reviewed every peer-reviewed published epidemiological study and that Dr. Nicholson's article was not peer-reviewed, was not published in a scientific study.

Plaintiffs' final new expert is a medical doctor, Benjamin Calesnick, M.D., director of the Division of Human Pharmacology at Hahnemann Medical College. Dr. Calesnick provides a two page affidavit which states that he has experience treating persons exposed to PCBs, that he has performed physical examinations on some of the plaintiffs and concludes: "To a reasonable degree of medical certainty, these plaintiffs have been exposed to PCBs, there is a potential for them to sustain injuries from PCB exposure, if they have not already sustained these injuries, and there is a need for early detection and treatment of these PCB induced injuries for plaintiffs." This seems to be strikingly similar to the opinion offered in *Martin v. Johns Manville Corp.* and ruled inadmissible by the Pennsylvania Supreme Court. Because that was an asbestos case, and it has been epidemiologically proved that asbestos exposure can cause cancer, that doctor might have had more of a basis for his opinion.

The answer of the plaintiffs also includes a further affidavit from Dr. Zahalsky, the immunologist. Dr. Zahalsky

states that he has had tests done on some of the plaintiffs and these tests show that some of the plaintiffs show immunologic abnormalities by certain indices. The affidavit, however, adds nothing to the statements of Dr. Zahalsky already on the record. Dr. Zahalsky's statement is insufficient to indicate that these "abnormalities" are legally cognizable injuries. More important, although Dr. Zahalsky asserts that these abnormalities are caused by PCBs, there is nothing to show that he considered and eliminated any other causes of the "abnormalities" other than PCBs or, indeed, that he is qualified to give a diagnosis of their cause.

The answer of these plaintiffs makes a number of other points. Frequently and indignantly, it is insisted that PCBs really are dangerous. Numerous sources and studies are cited and its hard to keep them straight. Courts in regulatory cases are quoted; congressmen in debate are quoted; animal, Yusho and Yu Cheng studies are quoted; studies of unknown origin are quoted; and the Nicholson study is quoted frequently. While all this contradicts the authorities the defendants quote, it does not prove causation of the variety of different diseases that the plaintiffs claim. Proving PCBs are generally dangerous proves nothing. Plaintiffs must prove that it is more likely than not that PCBs from defendants are the cause of the injuries they claim.

The plaintiffs make spirited defense of the use of animal and Yusho and Yu Cheng studies as a proper scientific basis for their experts' opinions.

The plaintiffs also supply an affidavit from Dr. Herbert Allen, the chemist who calculated how much PCB was in the air in the area. He states that although it might not be true at any given moment, if the ground contains one hundred times the background level of PCBs, the air, on average, contains one hundred times the background level of PCBs.

Plaintiffs make much of the fact that they have an affidavit from one of defendants' experts in another case from 1980 that says that animal studies show that chlorinated hydrocarbons and other chemicals, not PCBs, are dangerous. That was a case where the government was seeking injunctive relief trying to get a waste site cleaned up. The expert was giving animal studies as a reason for this. He was using animal studies in support of a regulatory decision. He was not saying that animal studies gave him the scientific basis for saying that it was more likely than not that a particular person has come down with a particular disease because of exposure to a particular chemical.

In disputing the defendants' attacks on their experts, the plaintiffs cite the case of *Osburn v. Anchor Laboratories, Inc.*, 825 F.2d 908, 914 (5th Cir. 1987) *cert. denied sub. nom Rachelle Laboratories, Inc. v. Osburn*, 108 S.Ct. 1476 (1988). In that case, defendants argue that plaintiff's expert's testimony on causation was insufficient to prove that chloramphenicol caused plaintiff's leukemia. Defendants argued that there was no generally accepted theory in the medical community that chloramphenicol could cause leukemia without first causing aplastic anemia, and plaintiff had not been diagnosed with aplastic anemia. The court stated:

> This argument missed the point. An expert's opinion need not be generally accepted in the scientific community before it can be sufficiently reliable and probative to support a jury finding . . . What is necessary is that the expert arrived at his causation opinion by relying upon *methods* that other experts in his field would reasonably rely on in forming their own, possibly different opinions, about what caused the patient's disease . . . Thus medical expert opinion testimony that is controversial can support a jury finding of causation as long as the doctor's conclu-

> sory opinion is bases [*sic*] upon well-founded methodologies . . . .

Id. at 915 (citations omitted).

Plaintiffs' conclude that: 1) there are PCBs present in Paoli; 2) that plaintiffs have PCBs in their bodies; 3) that plaintiffs have illnesses known to be caused by PCB exposure; 4) that plaintiffs have filed reliable expert opinions.

In the answer on behalf of the D. Bruce Hanes plaintiffs, the defendants' interpretation of the Pennsylvania cases requiring an injury before recovery in toxic tort litigation is disputed. These plaintiffs assert that a cause of action requires "some physical injury or some medically-identifiable effect" and that the fact that they have PCBs in their body is a "medically-identifiable effect." *Cathcart v. Keene*, 324 Pa. Super. at 152, 472 A.2d at 508. Plaintiffs argue that, if the purpose of this requirement is to prevent fraud or recovery for illusionary fears, that purpose is fulfilled by requiring that they demonstrate that their bodies contain PCBs before allowing them to recover for fear of future harm.

The plaintiffs argue that Dr. DiGregorio's opinion, that PCBs can cause cancer of the liver and other diseases, is sufficient to defeat defendants' summary judgment motion on the issues of whether plaintiffs should recover for the risk of future harm. However, asbestos causes cancer and recovery for risk of future harm was not permitted by the Pennsylvania Supreme Court in *Martin v. Johns-Manville.*

I believe that to make out a case the plaintiffs would need to prove four elements: 1) that defendants released PCBs into the environment; 2) that plaintiffs somehow ingested these PCBs into their bodies; 3) that plaintiffs have an injury; 4) that PCBs are the cause of that injury.

The plaintiffs have no problem with the first element.

It is the second element that is implicated by the wrangling over the question of whether there was enough PCBs in the air around Paoli for the plaintiffs to have ingested it by breathing. This dispute is irrelevant.

Either plaintiffs are right and they have more PCBs in their bodies than the rest of us, or defendants are right and they do not. If they do have an unusually high amount of PCBs, circumstantial evidence indicates where they come from.

However, the only legally admissible evidence in this case is that they do not. The plaintiffs have certainly failed to carry their burden to prove that they do. For the reasons discussed above, plaintiffs evidence to the contrary is inadmissible. Since the plaintiffs cannot demonstrate that they have been more heavily exposed to PCBs than the general population, they cannot recover.

Regarding the third issue, plaintiffs must point to some health problem that they have or they are out of court under Pennsylvania law. If the best they can do is possibility of future harm, fear of future harm, emotional distress, or the mere fact that they have PCBs in their body, then those plaintiffs cannot recover. The expert testimony we have regarding the possibility of future harm is insufficient for the Pennsylvania Supreme Court.

The fourth issue contains a number of subheadings.

First, there is the issue that the defendants heavily emphasize, that plaintiff's experts' opinions are not admissible because they are not sufficiently scientifically reliable. I have ruled that they are not admissible and

Second, there is the question of whether the plaintiffs' experts really are experts. Many of them seem to have very little formal academic training in the areas in which they testify. Although defendants often attack the experts, they do not do so systematically and provide no law on the question; therefore, this issue will not be considered.

Third, there is the lack of differential diagnoses. For example, an expert will claim that the plaintiff has asthma and that asthma is caused by PCBs to a reasonable degree of medical or scientific certainty; but when asked how he knows that the asthma is not caused by one of the other causes of asthma that produce asthma even in people who are not exposed to PCBs, the expert has no intelligible response. I think that this is fatal to the plaintiffs claim. See *In re "Agent Orange,"* 611 F. Supp. at 1250 to 1254. It is relevant to note that the plaintiffs' experts who are medical doctors do not purport to make differential diagnoses; the only experts who make the attempt are Ph.D.s. It is significant that the Klehr, Harrison-Kohn, Savett plaintiffs now have an M.D. testifying for them, but he is unwilling to say that any particular disease the plaintiffs have is cause [*sic*] by PCBs, just that they should be regularly checked because of the possibility of future harm. The plaintiffs call this a "medical monitoring claim." However, this claim is barred because the testimony of Dr. Calesnick and the other plaintiffs' experts who testify regarding the risk of future injury is insufficient to support it under Pennsylvania law.

Defendant Septa has filed a motion for summary judgment based on 42 Pa. C.S.A. § 5522 which requires that any person "who is about to commence any civil action" against a "government unit" or "Commonwealth agency" must file with the agency a statement with information about the claim within six months of the time or that claim is barred. Septa has been held to have the benefit of this act by Pennsylvania courts. *Feingold v. Septa,* 512 Pa. 567, 517 A.2d 1270 (1986); *Graffigno v. City of Philadelphia,* 98 Pa. Cmwlth. 624, 629 512 A.2d 91, 92 (1986).

The plaintiffs' most significant reply is that their causes of action accrued before these cases were decided and that therefore these holdings should not be applied to their cases retroactively.

However, these opinions did not make new law, they merely interpreted Pennsylvania statutes; therefore, applying their holdings to the plaintiffs is not applying anything retroactively. Any state law claims in any case in which plaintiffs did not file a statement within six months of their claimed injury accruing is barred by this statute. FELA claims against Septa are not barred by this statute.

Defendants have also moved for summary judgment against a few of the plaintiffs on the grounds of the statute of limitations. Defendants allege that reports from psychologists indicate that these plaintiffs sought psychological help outside the period of the statute of limitations because they thought they were injured by PCBs emanating from the Paoli Railyard. Because of my decision regarding the other summary judgment motions, I will not decide this motion.

Mabel Brown v. Septa, et al., No. 86-2229

In this case, the only plaintiff is Mabel Brown, who claims residential exposure. Her claimed injuries from PCB exposure include hypertension, immune system alterations, increased risk of future harm, emotional distress and fear of her increased risk. She has expert opinions from the Kohn, Savett-Klehr, Harrison experts. A blood test indicated 7 ppb PCB.

Defendants moved for summary judgment on causation. Because plaintiff has not provided evidence that she has ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, and because the expert testimony is insufficient to show that PCBs can cause hypertension or that PCBs rather than something else caused her hypertension, summary judgment is granted to the defendants.

Burrell v. Septa, et al., No. 86-2235

In this case, there are six plaintiffs who claim residential exposure. These plaintiffs claim a variety of injuries from PCB exposure. They have expert opinions from the Kohn, Savett-Klehr, Harrison experts. A blood test for Amber Burrell indicated less than 5 ppb PCB, for George Burrell 10 ppb, for Monica (Hilton) Burrell less than 5 ppb, for Priscilla E. Burrell 8 ppb. An adipose tissue test for Priscilla E. Burrell was negative. There were no tests for Andre Burrell and Bobby Burrell.

Defendants filed for summary judgment on the issue of causation. Because plaintiffs have not provided evidence sufficient to show that they ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, and because their expert testimony was insufficient to show that PCBs can cause the injuries claimed or that PCBs rather than something else caused these injuries, summary judgment is granted to the defendants.

Defendants have filed for summary judgment against plaintiffs Andre Burrell and Bobby Burrell for failure to produce evidence and this motion is granted.

Cummings v. Septa, et al., No. 86-2669

In this case, the only plaintiff is Wallace D. Cummins, who claims residential exposure. His claimed injuries include cancer of the kidney, immune system alterations, increased risk of future harm and fear of future harm. He has expert opinions from the Kohn, Savett-Klehr, Harrison experts. He has had two blood tests, one indicating less than 5 ppb, the other 6 ppb. An adipose tissue test was negative.

Defendants moved for summary judgment on causation. Because plaintiff has not provided evidence that he ingested PCBs from the railyard, because there is in-

sufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, and because the expert testimony is insufficient to show that PCBs can cause kidney cancer or that PCBs rather than something else caused his kidney cancer, summary judgment is granted for the defendants.

Cohen & Garon v. Septa, et al., No. 86-4037

Plaintiffs in this action have not brought suit seeking damages for personal injury. Summary judgment will not be granted in this case.

Thompson v. Septa, et al., No. 86-4723

Plaintiff in this action has not brought suit seeking damages for personal injury. Summary judgment will not be granted in this case.

Jones v. Septa, et al., No. 86-5277

This case involves two persons for which residential exposure is claimed. H. N. Jones died of cancer of the pancreas. He also suffered from hepatitis and chronic cirrhosis. There are no test results of PCB body burden. K. Louise Jones, his wife, claims increased risk of future harm, emotional distress and fear of future harm. Blood tests results were 11 ppb. Expert opinions are from the Kohn, Savett-Klehr, Harrison experts.

Defendants moved for summary judgment on causation. Because there has been insufficient evidence introduced to conclude that these individuals ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, and because the expert testimony is insufficient to show that PCBs can cause pancreatic cancer or the other diseases of H. N. Jones or that PCBs rather than something else caused his diseases, summary judgment is granted to defendants.

Lament v. Septa, et al., No. 86-5886

Plaintiff in this action has not brought suit seeking damages for personal injury. Summary judgment will not be granted in this case.

Christopher Brown v. Septa, et al., No. 86-7414

In this case plaintiff Christopher Brown claims residential exposure. The other plaintiff is Jacqueline Michelle Brown who claims loss of consortium only. His claimed injuries from PCB exposure include "abnormal liver function", and increased risk of future harm. His expert is G. John DiGregorio, M.D., Ph.D. A blood test indicated 9 ppb PCB and an adipose tissue test indicated 13.2 ppm.

Defendants have moved for summary judgment on causation. Because the plaintiff has not provided evidence that he ingested PCBs from the railyard, because there is insufficient evidence to support the claim for increased risk under Pennsylvania law and because the expert testimony is insufficient to show that PCBs caused plaintiff's abnormal liver function, summary judgment is granted to defendants.

Cathlene Brown v. Septa, et al., No. 86-7415

Plaintiff Cathlene Brown claims residential exposure. Her claimed injuries include "bruising", insomnia, irritability, anxiety and depression and increased risk of future harm. Her expert is D. John DiGregorio, M.D., Ph.D. A blood test was negative and an adipose tissue test showed .097 ppm PCB.

Defendants moved for summary judgment on causation. Because there is no evidence that she ingested PCBs from the railyard, because there is insufficient evidence to support her claim for increased risk under Pennsylvania law and because the expert testimony is insufficient to show that PCBs can or did cause plaintiff's injuries, summary judgment is granted to the defendants.

Craig Brown v. Septa, et al., No. 86-7416

Plaintiff Craig Brown claims residential exposure. The other plaintiff is his wife Catherine D. Brown who claims loss of consortium only. His claimed injuries include elevated L.D.H. enzymes and increased risk of future harm. His expert is D. John DiGregorio, M.D., Ph.D. A blood test showed 9 ppb PCBs and an adipose tissue test showed .7 ppm.

Defendants moved for summary judgment on causation. Because there is no evidence that he ingested PCBs from the railyard, because there is insufficient evidence to support a claim for increased risk under Pennsylvania law and because there is insufficient expert testimony that PCBs can or did cause plaintiff's injuries, summary judgment is granted to the defendants.

Defendants have filed a motion for summary judgment under the statute of limitations and this motion will not be decided.

Defendant Septa has filed a motion for summary judgment for failure to give proper notice of the claim under Pennsylvania law and this motion is granted.

Barbetta v. Septa, et al., No. 86-7417

Plaintiff Margherita Barbetta claims residential exposure. Her claimed injuries are increased risk of future harm and fear of her increased risk. A blood test was negative and adipose tissue test indicated 2.2 ppm PCB.

Defendants moved for summary judgment on causation. Because there is no evidence that she ingested PCBs from the railyard and because there is insufficient evidence to support a claim for increased risk or fear of increased risk under Pennsylvania law, summary judgment is granted to the defendants.

Johnson v. Septa, et al., No. 86-7418

Plaintiff Mary Retta Johnson claims residential exposure. Her claimed injuries include anemia, risk of future harm and fear of future harm. Her expert is G. John DiGregorio, M.D., Ph.D. A blood test indicated 18 ppb and an adipose tissue test .91 ppm.

Defendants have moved for summary judgment on causation. Because plaintiff has not provided evidence that she ingested PCBs from the railyard, because there is insufficient evidence to support a claim for increased risk or fear of increased risk under Pennsylvania law and because the expert testimony is insufficient to show that PCBs could or did cause plaintiff's anemia, summary judgment is entered for the defendants.

Defendants have filed a motion for summary judgment under the statute of limitations and this motion will not be decided.

Defendant Septa has filed a motion for summary judgment for failure to give proper notice under Pennsylvania law and this motion is granted.

Celeste Brown v. Septa, et al., No. 86-7419

Plaintiff Celeste Brown claims residential exposure. Her claimed injuries are increased risk of future harm and fear of future harm. Her expert is G. John DiGregorio, M.D., Ph.D. A blood test indicated 5 ppb PCB and an adipose tissue test indicated .7 ppm.

Defendants have moved for summary judgment on causation. Because the plaintiff has not provided evidence to show that she ingested PCBs from the railyard, and because there is insufficient evidence to support the claim for increased risk and fear under Pennsylvania law, summary judgment is granted to the defendants.

Clemmon Brown v. Septa, et al., No. 86-7420

Plaintiff Clemmon L. Brown claims residential exposure. His claimed injuries are increased risk of future harm and fear of future harm. His expert is G. John DiGregorio, M.D., Ph.D. A blood test was negative and an adipose tissue test indicated .6 ppm.

Defendants have moved for summary judgment on causation. Because the plaintiff has not provided evidence to show that he ingested PCBs from the railyard, and because there is insufficient evidence to support the claim for increased risk and fear under Pennsylvania law, summary judgment is granted to the defendants.

Cloyd Brown v. Septa, et al., No. 86-7421

Plaintiff Cloyd H. Brown claims residential exposure. His claimed injuries are increased risk of future harm and fear of future harm. A blood test was negative and an adipose tissue test indicated .082 ppm.

Defendants have moved for summary judgment on causation. Because the plaintiff has not provided evidence to show that he ingested PCBs from the railyard, and because there is insufficient evidence to support the claim for increased risk and fear under Pennsylvania law, summary judgment is granted.

Defendants have also moved for summary judgment in this case for failure to produce evidence under the case management order and this motion is also granted.

Curtis Brown v. Septa, et al., No. 86-7422

Plaintiff Curtis Brown claims residential exposure. His claimed injuries include insomnia, elevated triglycerides, increased risk of future harm and fear of future harm. A blood test indicated 30 ppb PCB and an adipose tissue test indicated .7 ppm.

Defendants have moved for summary judgment on causation. Because the plaintiff failed to provide evidence to

show that he ingested PCBs from the railyard, and because there is insufficient evidence to support the claim for increased risk and fear under Pennsylvania law and because there is not sufficient expert evidence to prove that PCBs could or did cause plaintiff's injuries, summary judgment is entered for the defendants.

Ingram v. Septa, et al., No. 86-7561

The four plaintiffs in this case claim residential exposure. These plaintiffs claim a variety of injuries from PCB exposure, including: skin and respiratory disorders for April Ingram, respiratory ailments for John Ingram, Jr., hypertension and elevated triglycerides for John Ingram, Sr., and asthma, hypertension and abnormal liver function for Patricia Ingram. They have expert opinions from the Kohn, Savett-Klehr, Harrison experts. A blood test for April Ingram indicated less than 5 ppb, for John Ingram, Jr. 6 ppb, for John Ingram, Sr. 12 ppb and for Patricia Ingram 17 ppb.

Defendants have moved for summary judgment on causation. Because the plaintiffs have not provided evidence sufficient to show that they have ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, because the expert testimony was insufficient to show that PCBs could cause their injuries or that PCBs rather than something else actually did cause their injuries, summary judgment is granted to the defendants.

Defendant Septa has filed a motion for summary judgment for failure to give proper notice of the claim under Pennsylvania law and this motion is granted.

Knight v. Septa, et al., No. 87-0712

Plaintiff Mary Alice Knight claims residential exposure. Her claimed injuries include congestive heart fail-

ure including myocardial infarctions, nephrectomy, cerebral ischemic attacks, risk of future harm, fear of future harm and emotional distress. She has expert opinions from the Kohn, Savett-Klehr, Harrison experts. A blood test indicated 7 ppb PCB.

Defendants moved for summary judgment on causation. Because plaintiff has not provided evidence that she has ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk, fear or emotional distress under Pennsylvania law, because the expert testimony is insufficient to prove that PCBs can cause the injuries claimed in this particular case or that PCBs rather than something else caused them, summary judgment is granted to the defendants.

Narcise v. Septa, et al., No. 87-1190

This is a case involving a worker at the railyard. John Narcise died of cancer of the brain. His wife has brought suit for loss of consortium, emotional distress, and for injuries to her caused by PCBs brought home from work by her husband. A blood test of Mr. Narcise indicated 22 ppb, corrected to 16 ppb. Expert opinions are from the Kohn, Savett-Klehr, Harrison experts.

Defendants moved for summary judgment on causation. Plaintiffs have not shown that Mrs. Narcise was exposed to PCBs from the railyard. Plaintiffs have not shown that PCBs can cause cancer of the brain or any of the other ailments that Mr. Narcise suffered from or that, in this particular case, it was PCBs rather than some other potential cause that caused Mr. Narcise's death. For these reasons, summary judgment is granted to the defendants.

Williams v. Septa, et al., No. 87-1258

In this case plaintiff Andre Williams claims occupational exposure. His claimed injuries include, persistent

skin rashes, joint irritation, increased risk of harm, fear of increased risk and emotional distress. He has expert opinions from the Kohn, Savett-Klehr, Harrison experts. One blood test indicated negative results and another indicated 31 ppb.

Defendants moved for summary judgment on causation. Because there is insufficient evidence to support claims of increased risk, fear and emotional distress under Pennsylvania law, and because there is insufficient testimony to prove that PCBs could cause the injuries claimed or did in this particular case, summary judgment is granted to the defendants.

The court will not consider defendants' motion for summary judgment on the ground of failure to produce evidence.

Defendant Septa has filed a motion for summary judgment on the ground that plaintiff has failed to give proper notice of its claim under Pennsylvania law. Summary judgment will not be granted on plaintiff's FELA claim.

Butler v. Septa, et al., No. 87-2874

In this case seven plaintiffs brought suit for residential exposure. In response to discovery requests under the case management order, plaintiffs' counsel informed the defendants that they do not now suffer from severe personal injuries that they attribute to PCBs. In response to defendants' motion for summary judgment, plaintiffs moved to amend their complaint in order to remove their claim for personal injuries. The purpose of this motion was to have their personal injury action dismissed without prejudice.

That motion is denied. Defendants' motion for summary judgment is granted.

Stanbach v. Septa, et al., No. 87-3227

This is a case involving a worker at the railyard. Charles J. Stanbach died of stomach cancer. Plaintiffs Charles W. Stanbach and Susanna Stanbach are his survivors. He has the Kohn, Savett-Klehr, Harrison experts. No tests were made of his PCB body burden.

Defendants moved for summary judgment on causation. Because plaintiffs have not shown that PCBs can cause stomach cancer or that PCBs caused Mr. Stanbach's stomach cancer, summary judgment is granted to the defendants.

Defendant Septa has filed a motion for summary judgment arguing that because Mr. Stanbach never worked for Septa, Septa cannot be liable. Plaintiffs claim that Septa's agreement to indemnify Conrail is an agreement to accept successor liability. Summary judgment is granted on this motion in favor of Septa.

Cunningham v. Septa, et al., No. 87-5269

Plaintiffs in this case claims residential exposure. Bessie Cunningham claims lung disease, arthritis, gastrointestinal dysfunction and other injuries as a result of PCB exposure. Matthew Cunningham claims hypertension, lung disease, Parkinson's disease, arthritis and other injuries as a result of PCB exposure. Their expert is Harry Shubin, M.D. Bessie Cunningham had a blood test that indicated 23 ppb PCB. Matthew Cunningham's blood test indicated 33 ppb.

Defendants moved for summary judgment on causation. Because plaintiffs have not provided evidence that they have ingested PCBs from the railyard, because there is insufficient evidence to support claims of increased risk fear or emotional distress under Pennsylavnia law, and because the expert testimony is insufficient to show that PCBs cause the diseases claimed or did in this particular

case, summary judgment is granted in favor of the defendants.

Defendant Septa has filed a motion for summary judgment for failure to give proper notice of the claim under Pennsylvania law and this motion is granted.

Reid v. Septa, et al., No. 87-5304

Plaintiff in this case did not file answers to discovery under the case management order. After the defendants moved for summary judgment, the plaintiff filed an answer which included the opinion of Harry Shubin, M.D. In his report Dr. Shubin stated:

> During the past 15-years, he has had multiple examinations and studies with some of the following diagnoses (not in order of importance):
>
> 1) Benign prostatic hypertrophy requiring transurethral prostatic resection
> 2) Demyelinating disorder of the spine
> 3) Hepatomegaly with gallbladder ptosis, in his pelvis
> 4) Adenomatous tumor of his epididymis—excised
> 5) Chronic obstructive lung disease with insufficiency
> 6) Chronic pruritic rash over body
> 7) Chronic gastritis
> 8) Anorexia and weight loss (69 pounds)
> 9) Sensory and motor changes in upper and lower extremities
> 10) Wasting of quadriceps bilaterally
> 11) Hypertensive cardiovascular disease
> 12) Acute transient cerebral accident

Dr. Shubin came to the following conclusion:

> In my opinion with reasonable medical certainty that his exposure to PCBs at the Paoli Railroad Yard (Brown Lot) is a significant causative/aggravating factor for his present impairments and disability-plus smoking.
>
> Further study and followup medical care is essential in an attempt to prevent any further complications, improve his general condition and to avoid any further exposure to PCBs or other toxic substances.

The defendants' motion for summary judgment for failure to produce evidence is granted.

The defendants' motion for summary judgment on causation is granted because the plaintiff's late reply is insufficient to show that plaintiff was exposed to PCBs from the railyard, that PCBs can cause Mr. Reid's illnesses or that they did so in this particular case.

The motion of defendant Septa for summary judgment on the ground that plaintiff failed to give proper notice under Pennsylvania law is granted.

APPENDIX E

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT
OF PENNSYLVANIA

Master File No. 86-2229

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

THIS DOCUMENT RELATES TO CIVIL ACTION NUMBERS:

86-2229 (MABEL BROWN v. SEPTA, *et al.*)
86-2235 (BURRELL v. SEPTA, *et al.*)
86-2669 (CUMMINS v. SEPTA, *et al.*)
86-5277 (JONES v. SEPTA, *et al.*)
86-7414 (CHRISTOPHER BROWN v. SEPTA, *et al.*)
86-7415 (CATHLENE BROWN v. SEPTA, *et al.*)
86-7416 (CRAIG BROWN v. SEPTA, *et al.*)
86-7417 (BARBETTA v. SEPTA, *et al.*)
86-7418 (JOHNSON v. SEPTA, *et al.*)
86-7419 (CELESTE BROWN v. SEPTA, *et al.*)
86-7420 (CLEMMON BROWN v. SEPTA, *et al.*)
86-7421 (CLOYD BROWN v. SEPTA, *et al.*)
86-7422 (CURTIS BROWN v. SEPTA, *et al.*)
86-7561 (INGRAM v. SEPTA, *et al.*)
87-0712 (KNIGHT v. SEPTA, *et al.*)
87-1190 (NARCISE v. SEPTA, *et al.*)
87-1258 (WILLIAMS v. SEPTA, *et al.*)
87-2874 (BUTLER v. SEPTA, *et al.*)
87-3227 (STANBACH v. SEPTA, *et al.*)
87-5269 (CUNNINGHAM v. SEPTA, *et al.*)
87-5304 (REID v. SEPTA, *et al.*)

ORDER

[Entered 11-29-88]

AND NOW, this 28th day of November, 1988, upon consideration of the Motions for Summary Judgment of the Defendants and all the responses filed in opposition thereto, it is hereby ORDERED and DECREED that said Motions are GRANTED and Summary Judgment is entered in favor of the Defendants and against the Plaintiffs on the Plaintiffs' personal injury claims in all of the above captioned cases.

BY THE COURT:

/s/ Robert F. Kelly
ROBERT F. KELLY J.

APPENDIX F

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT
OF PENNSYLVANIA

Master File No. 86-2229

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

THIS DOCUMENT RELATES TO CIVIL ACTION NUMBERS:

86-2229 (MABEL BROWN v. SEPTA, *et al.*)
86-2235 (BURRELL v. SEPTA, *et al.*)
86-2669 (CUMMINS v. SEPTA, *et al.*)
86-5277 (JONES v. SEPTA, *et al.*)
86-7414 (CHRISTOPHER BROWN v. SEPTA, *et al.*)
86-7415 (CATHLENE BROWN v. SEPTA, *et al.*)
86-7416 (CRAIG BROWN v. SEPTA, *et al.*)
86-7417 (BARBETTA v. SEPTA, *et al.*)
86-7418 (JOHNSON v. SEPTA, *et al.*)
86-7419 (CELESTE BROWN v. SEPTA, *et al.*)
86-7420 (CLEMMON BROWN v. SEPTA, *et al.*)
86-7421 (CLOYD BROWN v. SEPTA, *et al.*)
86-7422 (CURTIS BROWN v. SEPTA, *et al.*)
86-7561 (INGRAM v. SEPTA, *et al.*)
87-0712 (KNIGHT v. SEPTA, *et al.*)
87-1190 (NARCISE v. SEPTA, *et al.*)
87-1258 (WILLIAMS v. SEPTA, *et al.*)
87-2874 (BUTLER v. SEPTA, *et al.*)
87-3227 (STANBACH v. SEPTA, *et al.*)
87-5269 (CUNNINGHAM v. SEPTA, *et al.*)
87-5304 (REID v. SEPTA, *et al.*)

ORDER

[Filed Jan. 4, 1989]

AND NOW, this 4th day of January, 1989 upon consideration of Plaintiffs' Motions to Enter Final Judgment and the Responses filed thereto and finding that there is no just reason for delay, it is hereby ORDERED and DECREED that the Judgment rendered by the Court in the above captioned cases on November 28, 1988 and entered on November 29, 1988 in favor of Defendants and against Plaintiffs' on Plaintiffs personal injury claims be entered as a Final Judgment and the Clerk is directed to enter such Judgment forthwith.

BY THE COURT:

/s/ Robert F. Kelly
ROBERT F. KELLY J.

APPENDIX G

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT
OF PENNSYLVANIA

Civil Action No. 86-2229

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

This document relates to Civil Action Numbers:

86-2229	86-7414	86-7418	87-1190
86-2235	86-7415	86-7419	87-1258
86-2669	86-7416	86-7420	87-2874
86-5277	86-7417	86-7421	87-3227
		86-7422	87-5269
		86-7561	87-5304
		87-0712	

CIVIL JUDGMENT

Filed Jan. 4, 1989

Before HON. ROBERT F. KELLY

AND NOW, this 4th day of JANUARY 1989 in accordance with the Court's Order of Final Judgment on this date,

IT IS ORDERED that Judgment be and the same is hereby entered in favor of all the defendants and against all the plaintiffs.

BY THE COURT:

ATTEST: /s/ Thomas Garrity
Deputy Clerk

APPENDIX H

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-1973 through 88-1992,
89-1070 through 1079, and 89-1097

IN RE: PAOLI RAILROAD YARD PCB LITIGATION

(E.D. PA Civ. Nos. 86-7414/15/16/17/18/19/20/21/22,
87-5304, 86-2229, 87-1258, 87-1190, 87-0712, 86-7561,
87-5269, 86-2235, 86-2669, 86-5277, 87-3227, 87-2874)

SUR PETITION FOR PANEL REHEARING
WITH SUGGESTION FOR REHEARING IN BANC

PRESENT: HIGGINBOTHAM, *Chief Judge*, and BECKER, STAPLETON, MANSMANN, GREENBERG, NYGAARD, ALITO, *Circuit Judges*.

The petitions for rehearing filed by Southeastern Pennsylvania Transportation Authority, General Electric, National Railroad Passenger Corporation, City of Philadelphia, Consolidated Rail Corporation, and Monsanto Company having been submitted to the judges who participated in the decision of this Court and to all the other available circuit judges in active service, and no judge who concurred in the decision having asked for rehearing, and a majority of the circuit judges of the circuit in regular active service not having voted for rehearing by the court in banc, the petition for rehearing is DENIED.

BY THE COURT,

/s/ Edward R. Becker
Circuit Judge

Dated: NOV. 23 1990

APPENDIX I

UNITED STATES COURT OF APPEALS
FOR THE THIRD CIRCUIT

Nos. 88-1973/74/75/76/77/78/79/80/81/82
83/84/85/86/87/88/89/90/91/92,
89-1070/71/72/73/74/75/76/77/78/79
and 89-1097

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IN RE: PAOLI RAILROAD YARD PCB LITIGATION

* * * *

On Appeal From the United States District Court
for the Eastern District of Pennsylvania
(D.C. Civil Nos. 86-7414/15/16/17/18/19/20/21/22/
87-5304, 86-2229, 87-1258, 87-1190, 87-0712, 86-7561,
87-5269, 86-2235, 86-2669, 86-5277, 87-3227, 87-2874

PRESENT: BECKER, MANSMANN and NYGAARD, *Circuit Judges*

JUDGMENT

These causes came on to be heard on the records from the United States District Court for the Eastern District of Pennsylvania and were argued by counsel September 8, 1989.

On consideration whereof, it is now here ordered and adjudged by this Court that the summary judgment orders of the said District Court dated November 28, 1988, as made final by the orders entered January 6, 1989, be, and the same are hereby reversed and the cause remanded to the said District Court for further proceedings con-

sistent with the opinion of this Court. Costs taxed against the appellees.

ATTEST:

/s/ Sally Mrvos
Clerk

September 20, 1990

Certified as a true copy and issued in lieu of a formal mandate on December 3, 1990

Test: Frances R. Matsyk
Deputy Clerk, United States Court of
Appeals for the Third Circuit

APPENDIX J

STATUTE AND RULES INVOLVED

I.

Title 28 U.S.C. § 1291 provides:

Final decisions of district courts

The courts of appeals (other than the United States Court of Appeals for the Federal Circuit) shall have jurisdiction of appeals from all final decisions of the district courts of the United States, the United States District Court for the District of the Canal Zone, the District Court of Guam, and the District Court of the Virgin Islands, except where a direct review may be had in the Supreme Court. The jurisdiction of the United States Court of Appeals for the Federal Circuit shall be limited to the jurisdiction described in sections 1292(c) and (d) and 1295 of this title.

II.

Rule 54 of the Federal Rules of Civil Procedure provides in relevant part:

Judgments; Costs

(a) Definition; Form. "Judgment" as used in these rules includes a decree and any order from which an appeal lies. A judgment shall not contain a recital of pleadings, the report of a master, or the record of prior proceedings.

(b) Judgment Upon Multiple Claims or Involving Multiple Parties. When more than one claim for relief is presented in an action, whether as a claim, counterclaim, cross-claim, or third-party claim, or when multiple parties are involved, the court may direct the entry of a final judgment as to one or

more but fewer than all of the claims or parties only upon an express determination that there is no just reason for delay and upon an express direction for the entry of judgment. In the absence of such determination and direction, any order or other form of decision, however designated, which adjudicates fewer than all the claims or the rights and liabilities of fewer than all the parties shall not terminate the action as to any of the claims or parties, and the order or other form of decision is subject to revision at any time before the entry of judgment adjudicating all the claims and the rights and liabilities of all the parties.

* * * *

III.

Rule 56 of the Federal Rules of Civil Procedure provides:

Summary Judgment

(a) For Claimant. A party seeking to recover upon a claim, counterclaim, or cross-claim or to obtain a declaratory judgment may, at any time after the expiration of 20 days from the commencement of the action or after service of a motion for summary judgment by the adverse party, move with or without supporting affidavits for a summary judgment in the party's favor upon all or any part thereof.

(b) For Defending Party. A party against whom a claim, counterclaim, or cross-claim is asserted or a declaratory judgment is sought may, at any time, move with or without supporting affidavits for a summary judgment in the party's favor as to all or any part thereof.

(c) Motion and Proceedings Thereon. The motion shall be served at least 10 days before the time fixed for the hearing. The adverse party prior to the day of hearing may serve opposing affidavits. The judg-

ment sought shall be rendered forthwith if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to a judgment as a matter of law. A summary judgment, interlocutory in character, may be rendered on the issue of liability alone although there is a genuine issue as to the amount of damages.

(d) Case Not Fully Adjudicated on Motion. If on motion under this rule judgment is not rendered upon the whole case or for all the relief asked and a trial is necessary, the court at the hearing of the motion, by examining the pleadings and the evidence before it and by interrogating counsel, shall if practicable ascertain what material facts exist without substantial controversy and what material facts are actually and in good faith controverted. It shall thereupon make an order specifying the facts that appear without substantial controversy, including the extent to which the amount of damages or other relief is not in controversy, and directing such further proceedings in the action as are just. Upon the trial of the action the facts so specified shall be deemed established, and the trial shall be conducted accordingly.

(e) Form of Affidavits: Further Testimony; Defense Required. Supporting and opposing affidavits shall be made on personal knowledge, shall set forth such facts as would be admissible in evidence, and shall show affirmatively that the affiant is competent to testify to the matters stated therein. Sworn or certified copies of all papers or parts thereof referred to in an affidavit shall be attached thereto or served therewith. The court may permit affidavits to be supplemented or opposed by depositions, answers to interrogatories, or further affidavits. When a motion for summary judgment is made and supported as pro-

vided in this rule, an adverse party may not rest upon the mere allegations or denials of the adverse party's pleading, but the adverse party's response, by affidavits or as otherwise provided in this rule, must set forth specific facts showing that there is a genuine issue for trial. If the adverse party does not so respond, summary judgment, if appropriate, shall be entered against the adverse party.

(f) When Affidavits are Unavailable. Should it appear from the affidavits of a party opposing the motion that the party cannot for reasons stated present by affidavit facts essential to justify the party's opposition, the court may refuse the application for judgment or may order a continuance to permit affidavits to be obtained or depositions to be taken or discovery to be had or may make such other order as is just.

(g) Affidavits Made in Bad Faith. Should it appear to the satisfaction of the court at any time that any of the affidavits presented pursuant to this rule are presented in bad faith or solely for the purpose of delay, the court shall forthwith order the party employing them to pay to the other party the amount of the reasonable expenses which the filing of the affidavits caused the other party to incur, including reasonable attorney's fees, and any offending party or attorney may be adjudged guilty of contempt.

IV.

Rule 104 of the Federal Rules of Evidence provides:

Preliminary Questions

(a) Questions of Admissibility Generally. Preliminary questions concerning the qualification of a person to be a witness, the existence of a privilege, or the admissibility of evidence shall be determined by the court, subject to the provisions of subdivision (b). In making its determination it is not bound by the

rules of evidence except those with respect to privileges.

(b) Relevancy Conditioned on Fact. When the relevancy of evidence depends upon the fulfillment of a condition of fact, the court shall admit it upon, or subject to, the introduction of evidence sufficient to support a finding of the fulfillment of the condition.

(c) Hearing of Jury. Hearings on the admissibility of confessions shall in all cases be conducted out of the hearing of the jury. Hearings on other preliminary matters shall be so conducted when the interests of justice require, or when an accused is a witness and so requests.

(d) Testimony by Accused. The accused does not, by testifying upon a preliminary matter, become subject to cross-examination as to other issues in the case.

(e) Weight and Credibility. This rule does not limit the right of a party to introduce before the jury evidence relevant to weight or credibility.

V.

Rule 402 of the Federal Rules of Evidence provides:

Relevant Evidence Generally Admissible; Irrelevant Evidence Inadmissible

All relevant evidence is admissible, except as otherwise provided by the Constitution of the United States, by Act of Congress, by these rules, or by other rules prescribed by the Supreme Court pursuant to statutory authority. Evidence which is not relevant is not admissible.

VI.

Rule 403 of the Federal Rules of Evidence provides:

Exclusion of Relevant Evidence on Grounds of Prejudice, Confusion, or Waste of Time

Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

VII.

Rule 701 of the Federal Rules of Evidence provides:

Opinion Testimony by Lay Witnesses

If the witness is not testifying as an expert, the witness' testimony in the form of opinions or inferences is limited to those opinions or inferences which are (a) rationally based on the perception of the witness and (b) helpful to a clear understanding of the witness' testimony or the determination of a fact in issue.

VIII.

Rule 702 of the Federal Rules of Evidence provides:

Testimony by Experts

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise.

IX.

Rule 703 of the Federal Rules of Evidence provides:

Bases of Opinion Testimony by Experts

The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon

by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

X.

Rule 4 of the Federal Rules of Appellate Procedure provides in relevant part:

Appeal as of Right—When Taken

(a) Appeals in Civil Cases.

(1) In a civil case in which an appeal is permitted by law as of right from a district court to a court of appeals the notice of appeal required by Rule 3 shall be filed with the clerk of the district court within 30 days after the date of entry of the judgment or order appealed from; but if the United States or an officer or agency thereof is a party, the notice of appeal may be filed by any party within 60 days after such entry. If a notice of appeal is mistakenly filed in the court of appeals, the clerk of the court of appeals shall note thereon the date on which it was received and transmit it to the clerk of the district court and it shall be deemed filed in the district court on the date so noted.

(2) Except as provided in (a)(4) of this Rule 4, a notice of appeal filed after the announcement of a decision or order but before the entry of the judgment or order shall be treated as filed after such entry and on the day thereof.

(3) If a timely notice of appeal is filed by a party, any other party may file a notice of appeal within 14 days after the date on which the first notice of appeal was filed, or within the time otherwise prescribed by this Rule 4(a), whichever period last expires.

(4) If a timely motion under the Federal Rules of Civil Procedure is filed in the district court by

any party: (i) for judgment under Rule 50(b); (ii) under Rule 52(b) to amend or make additional findings of fact, whether or not an alteration of the judgment would be required if the motion is granted; (iii) under Rule 59 to alter or amend the judgment; or (iv) under Rule 59 for a new trial, the time for appeal for all parties shall run from the entry of the order denying a new trial or granting or denying any other such motion. A notice of appeal filed before the disposition of any of the above motions shall have no effect. A new notice of appeal must be filed within the prescribed time measured from the entry of the order disposing of the motion as provided above. No additional fees shall be required for such filing.

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